

410 Eagleview Boulevard, Suite 110 Exton, Pennsylvania 19341

Telephone: (610) 321-1800 Fax: (610) 321-2763

www.CRAworld.com

November 13, 2013

Reference No. 038443

Ms. Leslie Patterson Remedial Project Manager United States Environmental Protection Agency Region V 77 West Jackson Boulevard Mail Code SR-6J Chicago, Illinois 60604

Dear Ms. Patterson:

Re: Wetland Delineation Report

South Dayton Dump and Landfill Site City of Dayton, Montgomery County, Ohio

Conestoga-Rovers & Associates (CRA) completed a wetland delineation and assessment at the South Dayton Dump and Landfill Site (Site) in accordance with the Phase 1A Groundwater and Data Gap Investigation Work Plan dated May 10, 2013.

This report discusses the wetland delineation methodology and provides the results of CRA's field investigation. It includes copies of the United States Geologic Survey (USGS) topographic map (Figure 1), a recent aerial photograph (Figure 2), the Natural Resources Conservation Service (NRCS) web soil survey map (Figure 3), and the National Wetland Inventory (NWI) map each showing the location of the Site. The surveyed limits of the wetlands identified within the project area are shown on the Wetland Location Plan provided in Attachment A. Completed copies of the U.S. Army Corps of Engineers (COE) data forms referenced in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) are provided in Attachment B. Attachment C contains completed copies of the Ohio Rapid Assessment Method for Wetlands (ORAM 5.0) forms. Attachment D contains color photographs of the wetlands identified during the delineation, as well as typical uplands identified on the Site.

#### 1.0 REGULATORY FRAMEWORK AND STUDY METHODOLOGY

In Ohio, wetlands and waterways that are determined to be Waters of the U.S. are regulated at the federal level by the COE under Section 404 of the Clean Water Act. Wetlands and waterways that are determined to be isolated are regulated at the state level by the Ohio Environmental Protection Agency (OEPA).

Equal Employment Opportunity Employer





Reference No. 038443

- 2 -

CRA completed the wetland delineation for the Site on July 22 and 23, 2013 using the Routine Onsite Determination Method in the *Corps 1987 Wetland Delineation Manual* and the subsequent *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* guidance on field indicators. According to this methodology, wetlands are identified by the presence of three parameters: the dominance of hydrophytic vegetation, the presence of hydric soils, and positive indicators of wetland hydrology. Typically, all three parameters must be present for an area to be considered a jurisdictional wetland(s). However, in areas where one or more of the wetland parameters have been significantly disturbed and were deemed unreliable (e.g., mowed lawn areas, filled areas, etc.), the remaining parameters and best professional judgment were used to delineate the extent of jurisdictional wetlands.

Secondary sources of data for the Site, including the USGS topographic map, aerial photograph, NRCS soil survey, and NWI were reviewed prior to conducting the field investigation. These secondary sources of data are often useful in identifying areas that may contain wetlands based on topography, drainage ways, vegetation, and soil type.

Following the review of the secondary sources of data, wetland scientists from CRA inspected the Site and delineated the wetland and waterway boundaries based on the COE methods. The boundaries between wetlands and uplands were flagged in the field by CRA and surveyed by a land surveyor. The boundaries of parts of the "Quarry Pond", a large, flooded, abandoned quarry pit in the southern portion of the Site, were not flagged due to the presence of a sheer vertical bank of varying heights which made the flagging of these boundaries impractical /unsafe. In these cases, the wetland / waterbody boundary was determined based on the normal water elevation in the Quarry Pond from Site surveyed topographic data and on-Site confirmatory observations.

CRA conducted a wetland functional assessment of the isolated wetlands on the Site using the Ohio Rapid Assessment Method for Wetlands (ORAM 5.0). Data on the chemical, physical and biological characteristics of the wetlands were collected and assessed using the ORAM methods and CRA assigned each isolated wetland delineated a Wetland Category (Category 1, 2, or 3) based on the scoring scale in ORAM 5.0.

#### 2.0 REVIEW OF SECONDARY DATA

Figure 1 shows the location of the Site on a portion of the South Dayton, OH USGS topographic quadrangle. As shown on the USGS topographic map provided as Figure 1, the Site is approximately 80 acres and is located west of the intersection of Dryden Road and East River



Reference No. 038443

- 3 -

Road; near the Great Miami River. The site is separated from the Great Miami River by 350 feet of flat open land, the Great Miami River Recreation Trail, and a large man-made dyke.

Three isolated topographic depressions occur on the Site that contain ponded water and are referred to as the Small Pond, Large Pond, and Quarry Pond. Figure 2 shows the various parcels associated with the Site and the general location of the Small Pond, Large Pond, and Quarry Pond within the Site boundaries.

An aerial photograph from the NRCS Web Soil Survey (figure 3) shows that the Site is bordered by the Great Miami River to the north and west, Dryden Road to the east, and businesses and residences along East River Road to the south. The Site is currently characterized by areas of dense vegetation in various states of succession on waste and fill material.

As shown on Figure 3, the following soil types are mapped as occurring on the Site:

FmA:	Fox silt loam; 0 to 2 percent slopes; well drained; not hydric
FuB:	Fox-Urban land complex; well drained; not hydric
Gp: Grave	elpits; not hydric
Mb:	Made land; not hydric

The majority of the Site is mapped as Gravel pits. The very northern and eastern portions of the Site are mapped as Fox-Urban land complex soils which are well drained and not hydric. A small portion of the Site between the Gravel pits and Fox-Urban soils is mapped as Made land. The southernmost portion of the Site is mapped as Fox silt loam soils which are well drained and not hydric. The NRCS map does not indicate any hydric soil within the boundaries of the Site.

The NWI Map (Figure 4) identifies two wetlands within the Site boundaries. A large palustrine, unconsolidated bottom, excavated pond (PUBGx) is indicated in the southern portion of the Site and corresponds to the location of the Quarry Pond. A small, palustrine, scrub-shrub wetland (PSS1C) is indicated near the center of the Site and corresponds to the location of the Large Pond. The Small Pond does not appear on the NWI Map.



Reference No. 038443

- 4 -

#### 3.0 RESULTS OF WETLAND DELINEATION

#### 3.1 AREA A - QUARRY POND

Flags WLA-1 to A-26 on figure A1 in Attachment A delineate a palustrine emergent wetland associated with a seasonally flooded terrace adjoining the northwestern side of the Quarry Pond and a narrow swale that slopes from the central portion of the Site to the Quarry Pond. Due to the height and steepness of the bank of the Quarry Pond on its western, southern, and eastern banks, it was not possible to flag these waterbody boundaries. Therefore, these boundaries were delineated using the average water elevation in the Quarry Pond and were confirmed by field observations. The vegetation in this area was dominated by black willow (*Salix nigra*), purple loosestrife (*Lythrum salicaria*), moneywort (*Lysimachia nummularia*), straw sedge (*Cyperus esculentus*), and poison ivy (*Toxicodendron radicans*). The soil from 0 to 18 inches was observed to be historical fill and consisted of gray silts and sand and gravels. Indicators of wetland hydrology included saturated soil within the upper 12 inches of the soil profile and periodic inundation observed on historical aerial photographs.

Area A is documented on Data Form 8 in Attachment B, on ORAM 5.0 Form 1 in Attachment C, and in the color photographs provided in Attachment D.

#### 3.2 AREA B - SMALL POND

Flags B-1 to B-11 delineate the wetland boundaries of the Small Pond in the south central portion of the Site. The boundary of this wetland is generally abrupt, being bounded by various fill materials on all sides. The vegetation in this area was dominated by poison ivy along the edges, and eastern cottonwood (*Populus deltoides*), black willow, and green ash (*Fraxinus pennsylvanica*) throughout the Small Pond. The soils are highly variable consisting of varying fill materials. They range from very dark gray to brown (10YR 3/2) loam at 0 to 1 inches, to a lighter brown (10 YR 4/1) sandy loam at 1-18 inches, where soil is present. Indications of wetland hydrology included up to 6" of standing water in some places as well as blackened leaves and water marks on trees.

Area B is documented on Data Form 1 in Attachment B, on ORAM 5.0 Form 2 in Attachment C, and in the color photographs provided in Attachment D.



Reference No. 038443

- 5 -

#### 3.3 AREA C - LARGE POND

Flags C-1 to C-36 delineate the wetland boundaries associated with the Large Pond generally located in the northern portion of the Site. As with Area B, the wetland boundaries are abrupt as Area C occurs in a depression surrounded by wastes. The vegetation in this area was dominated by poison ivy, green ash, American sycamore (*Platanus occidentalis*), eastern cottonwood, and reed canary grass (*Phalaris arundinacea*). The soil was observed to be a very dark brown (10 YR 2/1) soil mixed with wastes. Wetland hydrology indicators in Area C included standing water, saturated soil, and water stained leaves.

Area C is documented on Data Forms 4 and 5 in Attachment B, on ORAM 5.0 Form 3 in Attachment C, and in the color photographs provided in Attachment D.

#### 3.4 UPLANDS

The uplands on the Site consist of a mosaic of herbaceous and shrub – scrub areas, depending on when they were last cleared. The uplands are dominated by poison ivy, crown vetch (*Coronilla varia*), teasel (*Dipsacus sylvestris*), Eastern cottonwood, black locust (*Robinia pseudoacacia*), and bush honeysuckle (*Diervilla lonicera*). Due to previous landfill operations, soil was highly variable in the uplands with colors including various shades of brown (10 YR 3/2, and 10 YR 4/4), and containing a variety of gravel and sandy materials in various places. No indicators of wetland hydrology were observed in the upland portions of the Site at the time of our field investigation.

The uplands on the Site are documented on Data Forms 2, 3, 6, 7, 9, 10, 11, and 13 in Attachment B and in the color photographs provided in Attachment D.

#### 4.0 RESULTS OF OHIO RAPID ASSESSMENT METHOD 5.0

CRA assessed each wetland area in accordance with OEPA methodologies (ORAM 5.0) to determine its State resource value classification. The category of an isolated wetland influences the permitting standards and mitigation requirements under OEPA regulations.

The final scores for Areas A, B, and C were 27.5, 17 and 27.5 respectively. All 3 wetland scores fell into the range for Category 1 wetlands. Category 1 wetlands are generally considered lower quality and typically have minimal or low function and/or integrity. Area B, the Small Pond, had the lowest ORAM score which is consistent with its degraded nature due to the



Reference No. 038443

- 6 -

surrounding landfill. Area C, also degraded and surrounded by the landfill, had a slightly higher score than Area B due to its larger size, slightly more diverse habitat, and more diverse plant communities. Area A also scored 27.5 with higher scores for hydrology and size, and lower scores for habitat and plant communities. Area A (the Quarry Pond) is bounded by sheer vertical banks on most sides and generally lacks significant areas of wetland along these sheer banks. Overall, the ORAM results for isolated wetlands support the infield observations that the wetlands have a low functional quality due to their location in the middle of a landfill and the past industrial site activities.

#### 5.0 SUMMARY & RECOMMENDATIONS

CRA identified three isolated wetland areas on the Site (Areas A, B, and C) that scored within the range of a Category 1 wetland as defined by OEPA in the ORAM 5.0. The remainder of the Site consists of uplands on varying fill materials. CRA recommends that a Jurisdictional Determination be obtained from the Army Corps of Engineers to verify the boundaries of jurisdictional Waters of the U.S. on the Site and verify the jurisdictional status of the isolated water bodies (ponds).

If you have any questions or require additional information, please call me at (610) 321-1800 ext. 11.

Yours truly,

CONESTOGA ROVERS & ASSOCIATES

Scott E. Bush, P.W.S.

Senior Ecologist

SEB/smk/1 Encl.

**FIGURES** 

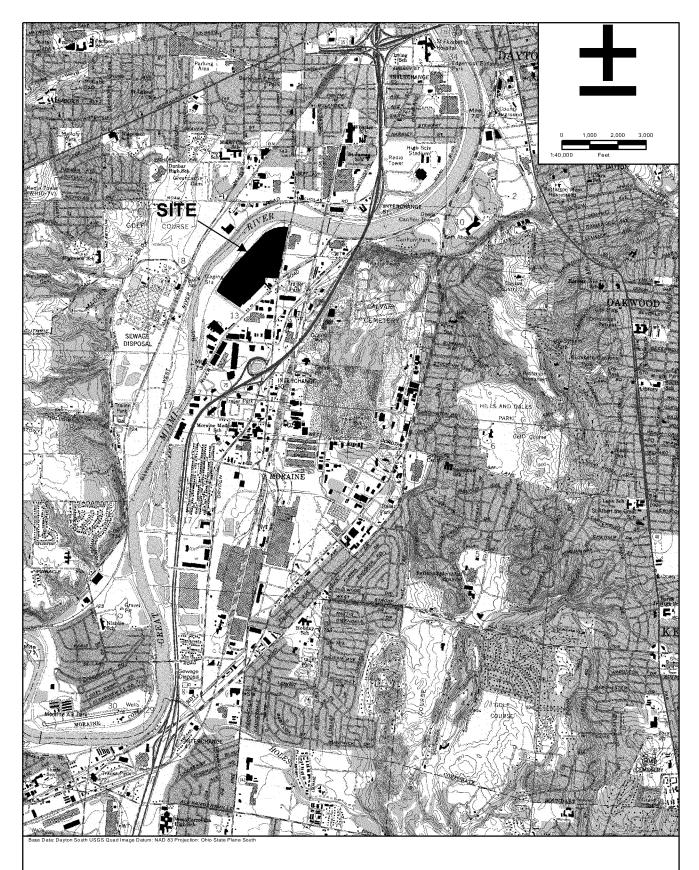
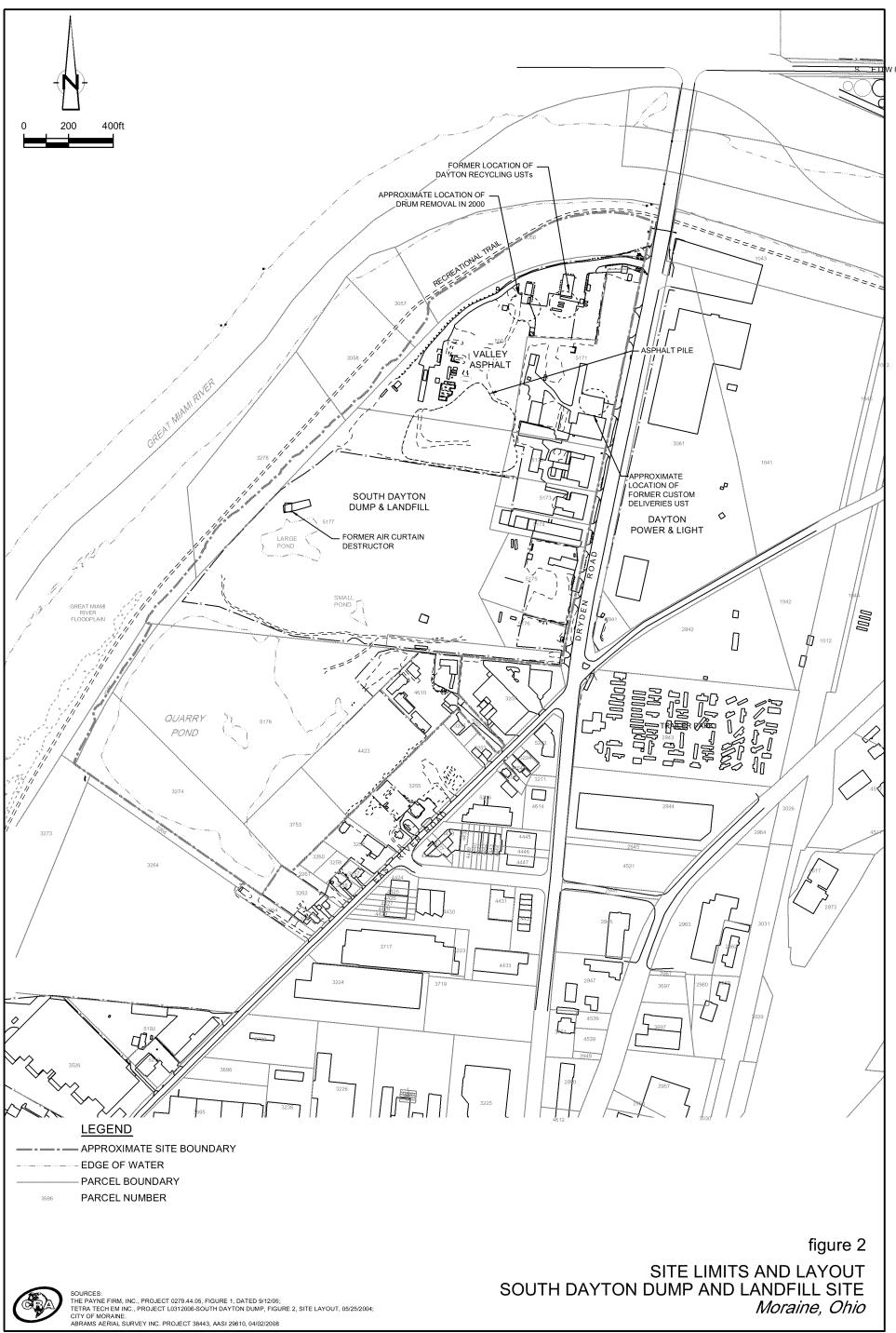
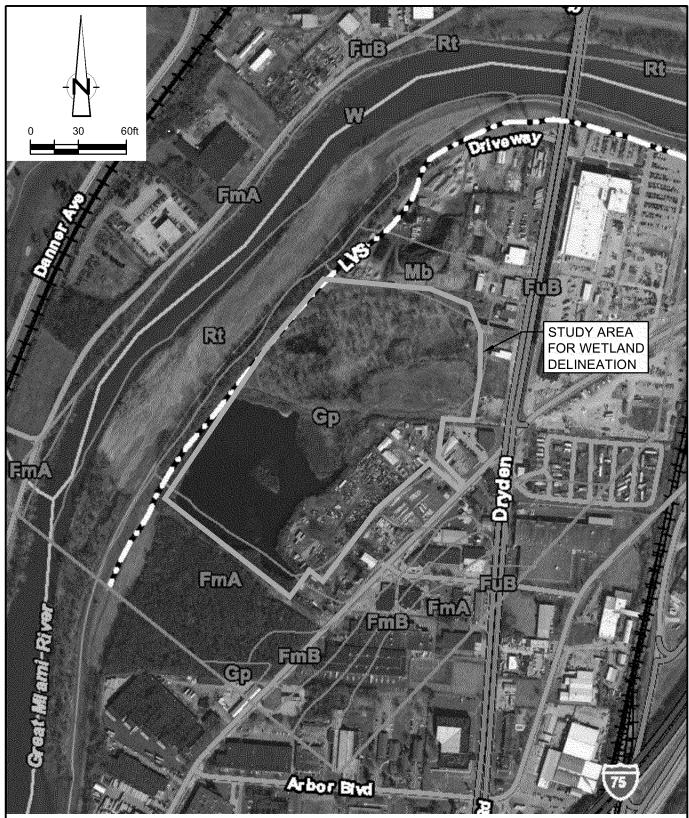


figure 1

SITE LOCATION MAP SOUTH DAYTON DUMP AND LANDFILL SITE  $\it Moraine, Ohio$ 







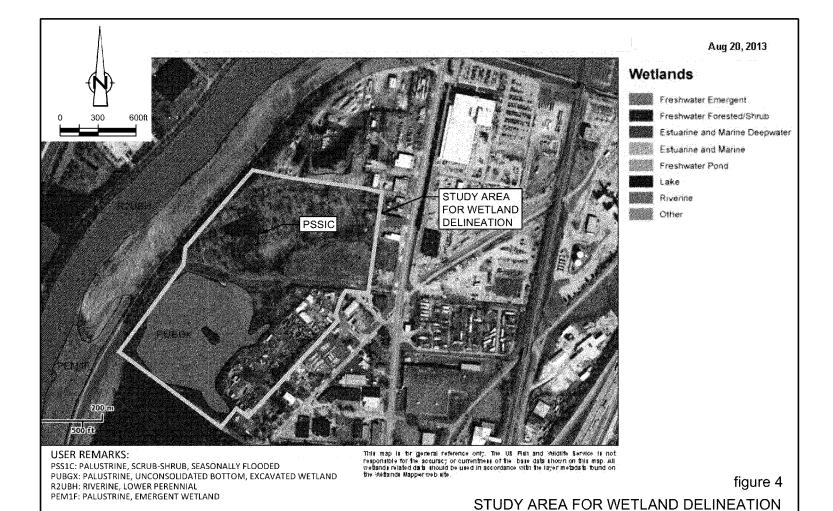
SOURCE: WEB SOIL SURVEY NATIONAL COOPERATIVE SOIL SURVEY

figure 3

STUDY AREA FOR WETLAND DELINEATION SOUTH DAYTON DUMP AND LANDFILL SITE Moraine, Ohio

SOUTH DAYTON DUMP AND LANDFILL SITE

Moraine, Ohio



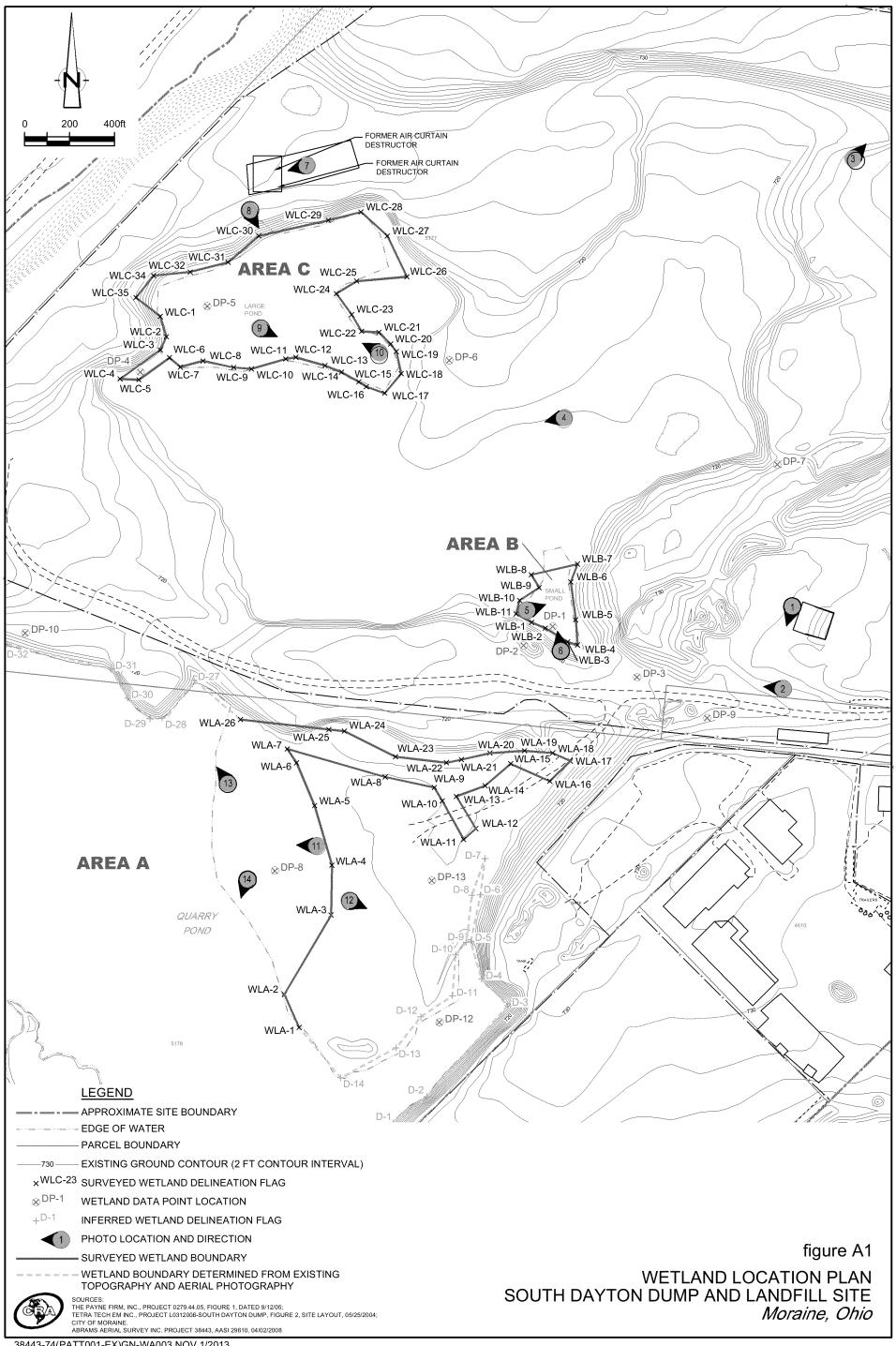
38443-74(PATT001-EX)GN-WA002 OCT 31/2013

SOURCE: U.S. FISH AND WILDLIFE SERVICES - NATIONAL WETLANDS INVENTORY

EPA-R5-2016-005983 Outlook0000785

ATTACHMENT A

SITE PLAN



EPA-R5-2016-005983 Outlook0000785

ATTACHMENT B

DATA FORMS

Project/Site South Dayton Landfill	City/0	County: Mo	raine / Mont	gomery Sampling Date:	7/23/2013
Applicant/Owner: CRA		State:	Ohio	Sampling Point:	1
Investigator(s): Scott Bush, David Blickwedel		Section	n, Township	o, Range:	
Landform (hillslope, terrace, etc.):	ace	Local re	lief (concav	re, convex, none):	Concave
Slope (%): 0 Lat: 39.7257		Long:	84.2208	3 Datum:	WGS84
Soil Map Unit Name Gp			NWI (	Classification:	PFO1
Are climatic/hydrologic conditions of the site typical fo	r this time o	f the year?	<u>Y</u> (I	f no, explain in remarks)	
Are vegetation , soil , or hydro	logy	significantly	disturbed?	Are "normal circu	mstances"
Are vegetation , soil , or hydro	logy	naturally pro		7 to Hosmai onoa	present? Yes
SUMMARY OF FINDINGS	·-			(If needed, explain any ar	nswers in remarks.)
Hydrophytic vegetation present? Y					·
Hydric soil present? Y		Is the sa	mpled area	a within a wetlan Y	
Wetland hydrology present? Y		f yes, opt	ional wetlan	nd site ID: Small Pond	<u></u>
Remarks: (Explain alternative procedures here or in a	sanarata re	anort )			
	•	,			
Location is within a	superfun	d landfill Sit	e, soils ar	e highly variable	
VEGETATION Use scientific names of plan	ıte				
VEGETATION OSC SCIENTING HAInes of plan	Absolute	Dominan	Indicator	Dominance Test Works	heet
<u>Tree Stratum</u> (Plot size: 30 )	% Cover	t Species	Staus	Number of Dominant Speci	
1 Populus deltoides	60	Υ	FAC	that are OBL, FACW, or FA	
2 Salix nigra	15	N	OBL	Total Number of Domina	ant
3 Platanus occidentalis	10	N	FACW	Species Across all Strat	ta: (B)
4 Fraxinus pennsylvanica	10	<u>N</u> .	FACW	Percent of Dominant Speci	
5 Acer saccharinum	<del>5</del> 100	N	FACW_	that are OBL, FACW, or FA	C: <u>75.00%</u> (A/B)
Sapling/Shrub stratum (Plot size: 15	\	=Total Cover		Prevalence Index Works	shoot
1 Salix nigra	, 20	Υ	OBL	Total % Cover of:	Silect
2				l .	(1 = 37
3				· —	2 = 54
4				FAC species 85 x	3 = 255
5				· <u> </u>	(4 = 0
		=Total Cover		l ' <u>——</u>	(5 = 0
Herb stratum (Plot size: 5	)				A) <u>346</u> (B)
1 Toxicodendron radicans subsp. negundo	25 10	<u>Y</u> -	FAC	Prevalence Index = B/A =	2.32
2 Dipsacus laciniatus 3 Bidens connatus	2		NI OBL	Hydrophytic Vegetation	Indicators:
4 Aster novae-angliae			FACW	Rapid test for hydrop	
5				X Dominance test is >5	
6				X Prevalence index is ≤	3.0*
7				Morphogical adaptati	ons* (provide
8				supporting data in Re	marks or on a
9				separate sheet)	
10	39	=Total Cover		Problematic hydrophy (explain)	ytic vegetation*
Woody vine stratum (Plot size:1	)			*Indicators of hydric soil and present, unless distur	
2				Hydrophytic	
	0	=Total Cover	_	vegetation present? Y	_
Remarks: (Include photo numbers here or on a separa	ate sheet)				
·					

Profile Desc	ription: (Descri	be to th	e depth	needed	to docu	ment the	indicat	or or confirm th	e absence	e of indicators.)			
Depth	<u>Matrix</u>			Red	dox Feat	ures_							
(Inches)	Color (moist)	%	Color (	moist)	%	Type*	Loc**	Texture	)	Remarks			
0-1"	10yr 2/1							Loam					
2-18"	10yr 4/1							Sandy Loam					
			<u> </u>			<del>                                     </del>			<del> </del>				
Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix													
		Depleti	on, RM =	Reduce	ed Matrix	., IVIS = IV	lasked S						
	il Indicators:			•			(0.4)			matic Hydric Soils:			
	isol (A1)		-			ed Matrix	(54)			ox (A16) (LRR K, L, R)			
	ic Epipedon (A2)		-		dy Redo	. ,				) (LRR K, L)			
	k Histic (A3)				pped Ma				-	or Peat (S3) (LRR K, L, R)			
	rogen Sulfide (A4					ky Minera			-	Masses (F12) (LRR K, L, R)			
	tified Layers (A5)					ed Matrix				k Surface (TF12)			
	n Muck (A10)		_			atrix (F3)		— Other (e	explain in r	remarks)			
	leted Below Dark		(A11) -			Surface							
	k Dark Surface (/	,				ırk Surfa				phytic vegetation and weltand			
	dy Mucky Minera			Rec	lox Depr	essions (	(F8)	hydrolog		present, unless disturbed or			
5 cn	n Mucky Peat or I	Peat (S3	5)						t	problematic			
Restrictive	_ayer (if observe	ed):											
Туре:								Hydric so	il present	? Y			
Depth (inche	s):					•							
Remarks:						•							
Remarks.													
HYDROLO	GY									'			
	drology Indicato	re ·								1			
_			*************	باممطد	all that a	(برامم		0	والمساوية والمساوية				
	cators (minimum o	or one is	required	, check			40\	Seco		cators (minimum of two required)			
X Surface \						Fauna (B	,			oil Cracks (B6)			
	ter Table (A2)					uatic Plan	its (B14) Odor (C1		_	Patterns (B10)			
Saturatio							-		-	on Water Table (C2)			
X Water Ma	t Deposits (B2)				(C3)	i Kilizosp	neres on	Living Roots	_ '	Burrows (C8)  Nisible on Aerial Imagery (C9)			
	osits (B3)					a of Radi	iced Iron	(C4) —		r Stressed Plants (D1)			
	t or Crust (B4)							illed Soils	_	nic Position (D2)			
·	osits (B5)				(C6)	ion iteau	Caonini			tral Test (D5)			
	n Visible on Aerial	Imagery	(B7)		_ ` ′	ck Surfac	e (C7)		-	(20)			
	Vegetated Concar	0,	, ,			r Well Da							
	ained Leaves (B9)		,				Remarks)	)					
Field Obser					. ,-	*			1				
Surface water		Yes	X	No		Depth (i	nches):	0-6"	Wetia	and			
Water table	-	Yes		No		Depth (i			1	ology			
Saturation pr		Yes		No		Depth (i			pres				
(includes car									'	<del></del>			
<u> </u>		m gauge	e monito	ing well	aerial n	hotos n	revious ir	nspections) if av	ailable <sup>.</sup>				
	Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:												
Remarks:													
										l			
PF01A													
', ', ',													

Project/Site South Dayton Landfill	,	City/County: Mo	oraine / Montgo	omery Sampling Date:	7/23/2013		
Applicant/Owner: CRA		State:	Ohio	Sampling Point:	2		
Investigator(s): Scott Bush, David Blickwe	del	Section	Section, Township, Range:				
Landform (hillslope, terrace, etc.):	Terrace	Local r	elief (concave,	convex			
Slope (%): Lat:	39.725540°	Long:	-84.220782	2° Datum:	WGS84		
Soil Map Unit Name Gp			NWI Cla	assification:	NA		
Are climatic/hydrologic conditions of the sit	te typical for this ti	me of the year?	Y (If r	no, explain in remarks)			
Are vegetation, soil	, or hydrology	significantly	/ disturbed?	Are "normal circu	mstances"		
Are vegetation, soil	, or hydrology	naturally pr	oblematic?		present? Yes		
SUMMARY OF FINDINGS				(If needed, explain any ar	nswers in remarks.)		
Hydrophytic vegetation present?	N						
Hydric soil present?	N	Is the s	ampled area	within a wetlan N			
Wetland hydrology present?	N	f yes, op	tional wetland	site ID:			
Remarks: (Explain alternative procedures	here or in a separa	ate report.)					
1	*		9 9	1. 1. 1. 1			
Location	is within a supe	rtuna ianatili Si	ite, soils are	nigniy variable			
VEGETATION Use scientific name	es of plants.						
	Abso	lute Dominan	Indicator	Dominance Test Worksh	neet		
Tree Stratum (Plot size: 30	) % Co	•		Number of Dominant Specie			
1 Robinia pseudoacacia		<u> </u>	FACU 1	that are OBL, FACW, or FA	C:(A)		
2				Total Number of Domina Species Across all Strat			
\[ \frac{3}{4} \]							
5				Percent of Dominant Specie that are OBL, FACW, or FAC			
	10	=Total Cove			(=================================		
Sapling/Shrub stratum (Plot size:	15 )			Prevalence Index Works	sheet		
1 Diervilla lonicera	90	) Y		Total % Cover of:			
2					1 = 0		
3				·	2 = 0		
5				· —	4 = 40		
	90	=Total Cove		· —	5 = 0		
Herb stratum (Plot size:	5 )		I .	· —	A) 175 (B)		
1 Parthenocissus quinquefolia	30	Υ Υ	FAC	Prevalence Index = B/A =	3.18		
2 Toxicodendron radicans subsp. nego	undo 15	ў Y	FAC				
3				Hydrophytic Vegetation			
4			.	Rapid test for hydroph	, ,		
5 6				Dominance test is >50 Prevalence index is ≤			
7			·	Morphogical adaptation			
8				supporting data in Re			
9				separate sheet)			
10				Problematic hydrophy	rtic vegetation*		
l	45	=Total Cove	r .	(explain)			
Woody vine stratum (Plot size:1	30)			*Indicators of hydric soil and v present, unless disturb			
2				Hydrophytic			
	0	=Total Cover	r	vegetation present? N			
Remarks: (Include photo numbers here or	on a separate she	et)	<u> </u>				

SOIL **Sampling Point:** 2 Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features (Inches) Color (moist) Color (moist) % Type\* Loc\*\* Texture Remarks 0-18" 10YR4/4 Various Fill and clay los Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. \*\*Location: PL = Pore Lining, M = Matrix **Hydric Soil Indicators:** Indicators for Problematic Hydric Soils: Histisol (A1) Sandy Gleyed Matrix (S4) Coast Prairie Redox (A16) (LRR K, L, R) Histic Epipedon (A2) Sandy Redox (S5) Dark Surface (S7) (LRR K, L) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Black Histic (A3) Stripped Matrix (S6) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Iron-Manganese Masses (F12) (LRR K, L, R) Loamy Gleved Matrix (F2) Very Shallow Dark Surface (TF12) Stratified Layers (A5) 2 cm Muck (A10) Depleted Matrix (F3) Other (explain in remarks) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) \*Indicators of hydrophytic vegetation and weltand Sandy Mucky Mineral (S1) Redox Depressions (F8) hydrology must be present, unless disturbed or 5 cm Mucky Peat or Peat (S3) problematic Restrictive Layer (if observed): Type: Hydric soil present? Depth (inches): Remarks: **HYDROLOGY** Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required) Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6) True Aquatic Plants (B14) High Water Table (A2) Drainage Patterns (B10) Saturation (A3) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Water Marks (B1) Oxidized Rhizospheres on Living Roots Crayfish Burrows (C8) Sediment Deposits (B2) Saturation Visible on Aerial Imagery (C9) Drift Deposits (B3) Presence of Reduced Iron (C4) Stunted or Stressed Plants (D1) Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils Geomorphic Position (D2) FAC-Neutral Test (D5) Iron Deposits (B5) (C6)Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Wetland Surface water present? Depth (inches): Yes No Depth (inches): hydrology Water table present? Yes No Depth (inches): Saturation present? Yes No present? Ν (includes capillary fringe) Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

On landfill

Project/Site South Dayton Landfill		City/County:	Ma	raine / Mon	gomery	Sampling Date:	7/23/2013
Applicant/Owner: CRA			ate:	Ohio		Sampling Point:	3
Investigator(s): Scott Bush, David Blickwedel			Section	on, Townshi	o, Range	- :	
Landform (hillslope, terrace, etc.):	Terrace	Lo	ocal re	elief (concav	e, conve	x, none):	flat
Slope (%): 0 Lat: 39.72	2553	Long:		84.2216	4	Datum:	WGS 84
Soil Map Unit Name Gp				/WI	Classifica	tion:	NA
Are climatic/hydrologic conditions of the site typic	al for this ti	me of the ye	ar?	<u> </u>	f no, exp	lain in remarks)	
Are vegetation , soil , or hy	ydrology	signific	cantly	disturbed?		Are "normal circu	ımstances"
	ydrology		ally pr	oblematic?		, ito morniar enec	present? Yes
SUMMARY OF FINDINGS	_				(If need	ded, explain any a	nswers in remarks.)
Hydrophytic vegetation present? N							
Hydric soil present? N		ls	the s	ampled are	a within	a wetlan N	
Wetland hydrology present?		f ye	es, op	tional wetlar	nd site ID	:	
Remarks: (Explain alternative procedures here or	in a senar	ate report )					
rtemarke. (Explain alternative procedures here of	iii a copair	ato (oport.)					
Location is with	in a supe	rfund land	fill Si	te, soils ar	e highly	variable	
VEGETATION Use scientific names of p	nlante						
VEGETATION Ose scientific flames of p	Abso	lute Domir	an	Indicator	Domin	ance Test Works	heet
Tree Stratum (Plot size:		over t Spec		Staus	1	r of Dominant Speci	
1	,	·				OBL, FACW, or FA	
2					Tota	I Number of Domina	ant
3					Spe	cies Across all Stra	ta:(B)
4						t of Dominant Speci	
5		= Total (	<del></del> _		that are	OBL, FACW, or FA	.C: <u>0.00%</u> (A/B)
<u>Sapling/Shrub stratum</u> (Plot size:	\ <u> </u>	Total (	Cover		Preval	ence Index Work	sheet
1	—′				l	6 Cover of:	Silect
2					OBL s		<b>(1 = 0</b>
3					FACW	species 0	(2 = 0
4					FAC s		(3 = 6
5					l	·	4 = 120
Harda atrations (Distained E	\ <u> </u>	= Total (	Cover	•	UPL sp		(5 = 10
Herb stratum (Plot size: 5	<u> </u>	,			1		(A) 136 (B)
1 Coronilla varia 2 Eupatorium rugosum	80			FACU	Prevale	ence Index = B/A =	4.00
3 Cichorium intybus				NI	Hydro	phytic Vegetation	Indicators:
4 Daucus carota	$-\frac{1}{2}$			UPL		pid test for hydrop	
5 Morus rubra	2	N		FAC		minance test is >5	•
6					Pre	evalence index is ≤	£3.0*
7						orphogical adaptati	
8						pporting data in Re	emarks or on a
9					l —	parate sheet)	
		4 = Total (	Cover			oblematic hydroph; (plain)	ytic vegetation"
Woody vine stratum (Plot size:	)		00101		l — '		wetland hydrology must be
1					muica	present, unless distur	,
2						drophytic	
	0	= Total (	Cover			getation esent? <u>N</u>	
Remarks: (Include photo numbers here or on a se	eparate she	et)				<del></del>	
		•					

Profile Desc	ription: (Descri	be to th	e depth needed	to docu	ment the	indicat	or or confirm	the absence	e of indicators.)
Depth	<u>Matrix</u>		Red	lox Feat	<u>ures</u>				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Text	ure	Remarks
0-18"	10YR 4/3						Sandy loam	n w/ gravel	gravel 20%
									-
*T	)	D 1- (				4		**! 1' -	ov Di — Boso Linio o M — Matrix
		- Depleti	on, RM = Reduce	ed Matrix	(, MS = N	/lasked S			n: PL = Pore Lining, M = Matrix
l -	il Indicators:		S a m	du Class	ad Matrix	(04)			ematic Hydric Soils:
l <u>——</u>	isol (A1)			dy Gleye dy Redo	ed Matrix	(54)			dox (A16) ( <b>LRR K, L, R</b> )
	ic Epipedon (A2)			-	trix (S6)				') ( <b>LRR K, L)</b> t or Peat (S3) ( <b>LRR K, L, R</b> )
	ck Histic (A3) rogen Sulfide (A4	11		•	ky Minera	ol (E1)		•	Masses (F12) (LRR K, L, R)
	itified Layers (A5)	,		-	ed Matrix				rk Surface (TF12)
	n Muck (A10)	•		-	ed Matrix atrix (F3)			r (explain in	
	lleted Below Dark	Surface			Surface		<u> </u>	i (expiaiii iii	Terriarks)
	ck Dark Surface (		· · · · —		ark Surfa		*!		ambustia vastatian and waltand
	dy Mucky Minera				essions				ophytic vegetation and weltand e present, unless disturbed or
	n Mucky Peat or	, ,		iox Debi	63310113	(10)	riyurc	nogy must b	problematic
		`	· /						problematic
	Layer (if observe	ed):							
Туре:					_		Hydric	soil presen	t? <u>N</u>
Depth (inche	es):				-				
Remarks:									
HYDROLO	OGY								
Wetland Hy	drology Indicate	rs:							
1 -			required; check	all that a	(vlaa		Se	condary Ind	icators (minimum of two required)
	Water (A1)	<u> </u>			Fauna (B	13)	<u> </u>		Soil Cracks (B6)
	ter Table (A2)				uatic Plar	•	-		Patterns (B10)
Saturation	, ,					Odor (C1	- 1)		son Water Table (C2)
	arks (B1)						Living Roots		Burrows (C8)
Sedimen	t Deposits (B2)			(C3)	•		_	Saturatio	n Visible on Aerial Imagery (C9)
Drift Dep	osits (B3)			Presenc	e of Redu	iced Iron	(C4)		or Stressed Plants (D1)
Algal Ma	t or Crust (B4)			Recent I	ron Redu	ction in T	illed Soils	Geomorp	hic Position (D2)
Iron Dep	osits (B5)			(C6)			_	FAC-Neu	ıtral Test (D5)
	on Visible on Aeria	• .	· ·		ck Surfac		_		
	Vegetated Conca		ce (B8)	. •	r Well Da	` ,			
Water-St	tained Leaves (B9)	)		Other (E	xplain in	Remarks	)		
Field Obser									
Surface wate	•	Yes	No		Depth (i				land
Water table		Yes	No		Depth (i	•		-	rology
Saturation p		Yes	No		Depth (i	nches):		pres	sent? N
	pillary fringe)								
Describe rec	orded data (strea	ım gauge	e, monitoring well	, aerial p	hotos, pi	revious ir	nspections), if	available:	
Damente									
Remarks:									
l									

Project/Site South Dayton Landfill	City/County:	Moraine / Mon	tgomery	Sampling Date:	7/23/2013			
Applicant/Owner: CRA	Stat	e: Ohi	0	Sampling Point:	4			
Investigator(s): Scott Bush, David Blickwedel		Section, Township, Range:						
Landform (hillslope, terrace, etc.): depression	Loc	Local relief (concave, convex, none): conca						
Slope (%): 0 Lat: 39.72641	Long:	84.2223	38	Datum:	WGS 84			
Soil Map Unit Name Gp		1VVI (	Classifica	tion:	N/A			
Are climatic/hydrologic conditions of the site typical for this	time of the yea	r? Y (	lf no, expl	ain in remarks)				
Are vegetation , soil , or hydrology	significa	antly disturbed?		Are "normal circu	mstances"			
Are vegetation , soil , or hydrology	naturall	y problematic?			present? Yes			
SUMMARY OF FINDINGS			(If need	ded, explain any ar	nswers in remarks.)			
Hydrophytic vegetation present? Y								
Hydric soil present? Y	ls th	ne sampled are	a within a	a wetlan Y				
Wetland hydrology present? Y	f yes	, optional wetlar	nd site ID:					
Remarks: (Explain alternative procedures here or in a sepa	rate report.)							
Location is within a sup	erfund landfil	l Site, soils ai	re highly	variable				
VEGETATION Use scientific names of plants.								
	solute Domina	ın Indicator	Domin	ance Test Worksl	heet			
Tree Stratum (Plot size:30) % C	Cover t Specie		Number	of Dominant Speci	es			
1			that are	OBL, FACW, or FA	C:3 (A)			
				Number of Domina				
			1	cies Across all Strat				
5			1	t of Dominant Speci OBL, FACW, or FA				
	0 = Total C	over		, ,	( = )			
Sapling/Shrub stratum (Plot size: 15 )			Preval	ence Index Works	sheet			
1			Total %	6 Cover of:				
2			OBL sp		1 = 10			
3			FACW FAC sp	·	2 = <u>160</u> 3 = <u>90</u>			
5			1		4 = 0			
	0 = Total C	over	UPL sp	·	5 = 0			
Herb stratum (Plot size: 5 )			Column		A) 260 (B)			
1			Prevale	ence Index = B/A =	2.17			
2 Carex scoparia	50 Y	FACW						
	30 Y	FAC		ohytic Vegetation				
	25 Y	FACW	I ——	pid test for hydropl				
	10 N 5 N	OBL FACW	l ——	minance test is >5 evalence index is ≤				
7		1 ACVV	I —	rphogical adaptation				
8				oporting data in Re				
9				parate sheet)				
10			1	blematic hydrophy	tic vegetation*			
<u> </u>	20 = Total C	over	— (ex	plain)				
Woody vine stratum (Plot size: 30 )			*Indica	•	wetland hydrology must be			
			Hv	present, unless disturi	bed or problematic			
	0 = Total C	over	-	getation				
		- · <del>- ·</del>	pre	esent? Y	_			
Remarks: (Include photo numbers here or on a separate sh	neet)		•					

Profile Desc	cription: (Descri	be to th	e depth n	eeded	to docu	ment the	indicat	or or confirm	the absenc	e of indicators.)
Depth	<u>Matrix</u>			Red	dox Featı	ures				
(Inches)	Color (moist)	%	Color (n	noist)	%	Type*	Loc**	Textu	ıre	Remarks
0-18"	10yr 2/1	100						silt loam and	d fill sands	
	·									
							-			
L			L			L	<u> </u>		444 4	
	Concentration, D	= Depleti	on, RM =	Reduce	ed Matrix	, MS = N	/lasked S			n: PL = Pore Lining, M = Matrix
1 -	oil Indicators:			_			(O.1)			ematic Hydric Soils:
	tisol (A1)		_		dy Gleye		(S4)			dox (A16) (LRR K, L, R)
	tic Epipedon (A2)		_		ndy Redo					() (LRR K, L)
	ck Histic (A3)		_		pped Ma		= .		-	t or Peat (S3) (LRR K, L, R)
	Irogen Sulfide (A4		_		my Muck				-	Masses (F12) (LRR K, L, R)
	atified Layers (A5)	)	_		my Gley					rk Surface (TF12)
	m Muck (A10)				oleted Ma			X Other	(explain in	remarks)
	leted Below Dark		· (A11) _		lox Dark					
	ck Dark Surface (		_		oleted Da		. ,			ophytic vegetation and weltand
	idy Mucky Minera			Red	lox Depr	essions (	(84)	hydro		e present, unless disturbed or
<sup>5 cr</sup>	n Mucky Peat or	Peat (S3	)							problematic
Restrictive	Layer (if observe	ed):								
Туре:								Hydric :	soil presen	t? Y
Depth (inche	es):					•				
Remarks:	<u> </u>									
remarks.										
Assumed	d hydric. Dark	color re	elated to	surfici	al mate	rial fror	n landfi			
HYDROLO	)CV									
	drology Indicate									
	cators (minimum	of one is	required;	<u>check</u>				Sec		icators (minimum of two required)
X Surface	` '				_	Fauna (B	•			Soil Cracks (B6)
	ter Table (A2)					uatic Plan		. –		Patterns (B10)
X Saturation							Odor (C1	·		son Water Table (C2)
	arks (B1)					l Rhizosp	heres on	Living Roots		Burrows (C8)
	nt Deposits (B2)				(C3)					n Visible on Aerial Imagery (C9)
'	oosits (B3)						iced Iron	` ′		or Stressed Plants (D1)
	it or Crust (B4)					ron Redu	ction in T	illed Soils		phic Position (D2)
	osits (B5)				(C6)			_	— FAC-Neu	tral Test (D5)
	on Visible on Aeria	• .	, ,		_	ck Surfac				
	Vegetated Conca		ce (B8)			r Well Da	' '			
	tained Leaves (B9)	)			Other (E	xplain in	Remarks	)		
Field Obser			-							
Surface wat	•	Yes	X	No		Depth (i		2		land
Water table	•	Yes		No		Depth (i	,		_	rology
Saturation p		Yes	X	No		Depth (i	nches):	0	pres	sent? Y
	pillary fringe)									
Describe red	orded data (strea	ım gauge	e, monitori	ng well	, aerial p	hotos, pi	revious ir	nspections), if a	available:	l
Domarica										
Remarks:										l
	_	_								
sparse c	oncave depres	sion. C	ricket Fr	ogs, (	green fr	og				
l										

Project/Site South Dayton Landfill				tgomery Sampling Date:	7/23/2013		
Applicant/Owner: CRA	·	State: Ohio Sampling Point: 5					
Investigator(s): Scott Bush, David Blickwedel		Section, Township, Range:					
Landform (hillslope, terrace, etc.):	race	Local re	Concave				
Slope (%): 0.1 Lat: 39.7265		Long:	84.2222	5 Datum:	WGS84		
Soil Map Unit Name Gp			1WI	Classification:	N/A		
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?	Y (I	If no, explain in remarks)			
Are vegetation , soil , or hydro		significantly		Are "normal circ	umetancee"		
Are vegetation , soil , or hydro	· · · —	naturally pro		Ale normal circ	present? Yes		
SUMMARY OF FINDINGS				(If needed, explain any	·		
Hydrophytic vegetation present? Y							
Hydric soil present? Y		Is the s	ampled are	a within a wetlan`	<u>Y</u>		
Wetland hydrology present? Y		f yes, op	tional wetlar	nd site ID:			
Remarks: (Explain alternative procedures here or in a	•		Site, soil is	s highly variable			
VEGETATION Use scientific names of plan	nts.						
	Absolute	Dominan	Indicator	Dominance Test Work			
Tree Stratum (Plot size: 30 )		t Species	Staus	Number of Dominant Spec			
1 Populus deltoides 2 Platanus occidentalis	20	<u>Y</u> Y	FAC	that are OBL, FACW, or F.			
2 Platanus occidentalis 3			FACW	Total Number of Domir Species Across all Str			
4				Percent of Dominant Spec	``		
5				that are OBL, FACW, or F.			
	50	= Total Cover			` ′		
Sapling/Shrub stratum (Plot size: 15	)			Prevalence Index Worl	ksheet		
1				Total % Cover of:			
2				· —	x 1 = 40		
3				· —	x 2 = 100		
4				· -	x 3 = 180		
5		- Total Cavas		FACU species 0	x 4 = 0		
Herb stratum (Plot size: 5	\	= Total Cover		UPL species 0 Column totals 150	x = 0 (A) 320 (B)		
	./	V	EAC		· ` ´ <del> `</del> ` `		
1 Toxicodendron radicans subsp. negundo 2 Phalaris arundinacea	30	<u> </u>	FACW	Prevalence Index = B/A	= 2.13		
3 Bidens connatus	10	<u>`</u>	OBL	Hydrophytic Vegetatio	n Indicators:		
4 Lycopus uniflorus	10		OBL	Rapid test for hydro			
5 Leersia oryzoides	10	N	OBL	X Dominance test is >	50%		
6 Phyla lanceolata	10	N	OBL	X Prevalence index is	≤3.0*		
7				Morphogical adapta	tions* (provide		
8				supporting data in R	lemarks or on a		
9				separate sheet)			
10	100	= Total Cover		Problematic hydropl(explain)	nytic vegetation*		
Woody vine stratum (Plot size:1	.)			•	d wetland hydrology must be urbed or problematic		
2				Hydrophytic			
	0	= Total Cover		vegetation present?	Υ		
Remarks: (Include photo numbers here or on a sepa	rate sheet)			•			

Profile Desc	ription: (Descri	be to th	e depth n	eeded	to docu	ment the	indicat	or or confirm th	he absenc	e of indicators.)
Depth	<u>Matrix</u>			Red	dox Feat	ures				
(Inches)	Color (moist)	%	Color (n	noist)	%	Type*	Loc**	Texture	е	Remarks
0-18"	10YR2/1	100						fill sands		color due to parent material
										·
									-	
	Concentration, D =	- Depleti	on, RM =	Reduce	ed Matrix	, MS = N	/lasked S			n: PL = Pore Lining, M = Matrix
l -	il Indicators:			_						matic Hydric Soils:
	isol (A1)		_		idy Gleye		(S4)			ox (A16) ( <b>LRR K, L, R</b> )
	ic Epipedon (A2)		_		ndy Redo					) (LRR K, L)
	ck Histic (A3)		_		pped Ma					or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A4	•	_		my Mucl	-				Masses (F12) ( <b>LRR K, L, R</b> )
	tified Layers (A5)	)	_		my Gley					k Surface (TF12)
	n Muck (A10)		_		oleted Ma			X Other (	(explain in i	remarks)
	leted Below Dark		(A11) _		lox Dark					
	k Dark Surface (		_		oleted Da					phytic vegetation and weltand
	dy Mucky Minera		_	Red	lox Depr	essions	(F8)	hydrolo		present, unless disturbed or
5 cr	n Mucky Peat or I	Peat (S3	)						1	problematic
Restrictive	Layer (if observe	ed):								
Туре:	•	•						Hydric so	oil present	? Y
Depth (inche	es):					•		-	•	
Remarks:						•				
Remarks.										
"Soil" is o	composed of in	nported	fill sand	and o	color is	due to t	he colo	r of the sand.	Assume	d hydric.
	•	•								·
LIVEROLO	201									
HYDROLO										
1	drology Indicato									
	cators (minimum	of one is	required;	check				Seco		cators (minimum of two required)
Surface \	Water (A1)					Fauna (B	,			oil Cracks (B6)
	ter Table (A2)				•	uatic Plar	. ,			Patterns (B10)
X Saturation							Odor (C1	·		on Water Table (C2)
	arks (B1)					l Rhizosp	heres on	Living Roots		Burrows (C8)
	t Deposits (B2)				(C3)					n Visible on Aerial Imagery (C9)
·	osits (B3)				-		iced Iron			r Stressed Plants (D1)
	t or Crust (B4)					ron Redu	ction in T	illed Soils X		hic Position (D2)
	osits (B5)				(C6)				FAC-Neu	tral Test (D5)
	on Visible on Aeria				_	ck Surfac	. ,			
	Vegetated Concar		e (B8)			r Well Da	` ,			
X Water-St	tained Leaves (B9)	)			Other (E	xplain in	Remarks	)		
Field Obser	vations:									
Surface wate	•	Yes	X	No		Depth (i			Wetl	
Water table		Yes		No		Depth (i	•		_	ology
Saturation p		Yes	X	No		Depth (i	nches):	0	pres	ent? Y
(includes ca	pillary fringe)									
Describe rec	orded data (strea	ım gauge	e, monitori	ng well	, aerial p	hotos, pi	revious ir	nspections), if av	/ailable:	
										l
Remarks:										
										l
										l

Project/Site South Dayton Landfill	City/	County: Mc	oraine / Mont	tgomery Sampling Date:	7/23/2013
Applicant/Owner: CRA		State:	Ohio	<del></del>	6
Investigator(s): Scott Bush, David Blickwede	 	Section			
Landform (hillslope, terrace, etc.):	Terrace	Local re	elief (concav	Concave	
Slope (%): 1 Lat: 3	39.72654	Long:	84.2208	5 Datum:	WGS 84
Soil Map Unit Name Gp				Classification:	NA
Are climatic/hydrologic conditions of the site t	typical for this time o	of the year?	<u>Y</u> (I	f no, explain in remarks)	
Are vegetation , soil ,	or hydrology	significantly	disturbed?	Are "normal circu	ımstances"
Are vegetation , soil ,	or hydrology	naturally pro		1119 1101111111111111111111111111111111	present? Yes
SUMMARY OF FINDINGS				(If needed, explain any ar	nswers in remarks.)
Hydrophytic vegetation present?	1				
Hydric soil present?	1	Is the sa	ampled area	a within a wetlan N	
Wetland hydrology present?	<u> </u>	f yes, op	tional wetlan	nd site ID:	
Remarks: (Explain alternative procedures her	re or in a separate re				
Locatio	on is a superfund	landfill Site	, soil is hig	ıhly variable	
VEGETATION Use scientific names	of plants				
VEGETATION 030 3010111110 Harriso	Absolute	Dominan	Indicator	Dominance Test Works	heet
<u>Tree Stratum</u> (Plot size: 30	) % Cover	t Species	Staus	Number of Dominant Speci	
1 Robinia pseudoacacia		ΥΥ	FACU	that are OBL, FACW, or FA	
2 Populus deltoides	30	Υ	FAC	Total Number of Domina	ant
3 Ailanthus altissima	10	N	NI	Species Across all Strat	ta:5 (B)
4				Percent of Dominant Speci	
5	70	- Tatal Cayor		that are OBL, FACW, or FA	.C: <u>20.00%</u> (A/B)
Sapling/Shrub stratum (Plot size: 1		= Total Cover		Prevalence Index Works	chaat
1 Robinia pseudoacacia	40	Υ	FACU	Total % Cover of:	sileet.
2 Diervilla Ionicera	40	<u> </u>	NI		< 1 = 0
3					(2 = 0
4				FAC species 40 x	3 = 120
5				· —	( 4 = <u>280</u>
		= Total Cover		· —	(5 = <u>0</u>
Herb stratum (Plot size: 5					(A) 400 (B)
1 Coronilla varia		Y	NI FAC	Prevalence Index = B/A =	3.64
2 Verbena urticifolia		N	FAC_	Hydrophytic Vegetation	Indicatore
3				Rapid test for hydropi	
5				Dominance test is >5	, ,
6				Prevalence index is ≤	
7				Morphogical adaptati	ons* (provide
8				supporting data in Re	
9				separate sheet)	
10		T-1-1 Cavan		Problematic hydrophy	/tic vegetation*
Woody vine stratum (Plot size: 30		= Total Cover		(explain)	
Woody vine stratum (Plot size: 30	<u> </u>			*Indicators of hydric soil and v present, unless distur	, 0,
2				Hydrophytic	
	0	= Total Cover		vegetation present? N	
Remarks: (Include photo numbers here or on	a separate sheet)				

Profile Desc	cription: (Descri	be to th	e depth needed	to docu	ment the	indicat	or or confirm	the absenc	e of indicators.)
Depth	<u>Matrix</u>		Red	dox Feat	ures				·
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	ıre	Remarks
0-18"	10 yr 3/2	100					sand / debri	s	Color due to substrate
	,							-	
		= Depleti	on, RM = Reduce	ed Matrix	:, MS = N	/lasked S			n: PL = Pore Lining, M = Matrix
_	il Indicators:								ematic Hydric Soils:
	isol (A1)				ed Matrix	(S4)			lox (A16) ( <b>LRR K, L, R</b> )
	ic Epipedon (A2)			idy Redo					) (LRR K, L)
	ck Histic (A3)			pped Ma					or Peat (S3) ( <b>LRR K, L, R</b> )
	rogen Sulfide (A4			-	ky Minera			_	Masses (F12) ( <b>LRR K, L, R</b> )
	tified Layers (A5)	)			ed Matrix				k Surface (TF12)
	n Muck (A10)				atrix (F3)		Other	(explain in	remarks)
	leted Below Dark		· · ·		Surface				
	k Dark Surface (				ırk Surfa			-	ophytic vegetation and weltand
	dy Mucky Minera	. ,		lox Depr	essions (	(F8)	hydro		e present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	)						problematic
Restrictive	Layer (if observe	∍d):							
Туре:	-	-					Hydric :	soil present	t? N
Depth (inche	es):				•		-	•	
Dl	<u> </u>				•				
Remarks:									
UVDDOL	201								
HYDROLO									
_	drology Indicato								
		of one is	required; check				Sec		cators (minimum of two required)
	Water (A1)				Fauna (B	,	_	Surface S	Soil Cracks (B6)
	ter Table (A2)				uatic Plan				Patterns (B10)
Saturation						Odor (C1	_		on Water Table (C2)
	arks (B1)				l Rhizosp	heres on	Living Roots	,	Burrows (C8)
	t Deposits (B2)			(C3)			_		n Visible on Aerial Imagery (C9)
	osits (B3)			•		iced Iron	· ·		r Stressed Plants (D1)
	t or Crust (B4)				ron Redu	ction in T	illed Soils		hic Position (D2)
	osits (B5)		(2.2)	(C6)			_	FAC-Neu	tral Test (D5)
	on Visible on Aeria				ck Surfac	. ,			
	Vegetated Conca				r Well Da				
	tained Leaves (B9)	)		Other (E	xpiain in	Remarks	)		
Field Obser					_				
Surface wat	•	Yes	No		Depth (i			Wet	
Water table	•	Yes	No		Depth (i			1 -	rology
Saturation p		Yes	No		Depth (i	ncnes):		pres	ent? N
	pillary fringe)								
Describe red	orded data (strea	ım gauge	e, monitoring well	, aerial p	hotos, pi	revious ir	nspections), if a	available:	
Domester									
Remarks:									

Project/Site South Dayton Landfill		City/County:	Moraine / Mor	ntgomery	Sampling Date:	7/23/2013			
Applicant/Owner: CRA		Sta	State: Ohio Sampling Point: 7						
Investigator(s): Scott Bush, David Blickw	edel		Section, Township, Range:						
Landform (hillslope, terrace, etc.):	Terrace	Lo	cal relief (conca	ve, convex	, none):	Concave			
Slope (%): 1 Lat:	39.72622	Long:	84.2192	23	Datum:	WGS84			
Soil Map Unit Name Gp			١W١	Classificati	ion:	NA			
Are climatic/hydrologic conditions of the s	ite typical for this	time of the yea	ar? Y (	(If no, expla	ain in remarks)				
Are vegetation , soil	, or hydrology	signific	antly disturbed?	>	Are "normal circui	mstances"			
Are vegetation , soil	, or hydrology	 natural	ly problematic?			present? Yes			
SUMMARY OF FINDINGS	_			(If need	ed, explain any an	swers in remarks.)			
Hydrophytic vegetation present?	N								
Hydric soil present?	N	ls t	he sampled are	ea within a	wetlan N				
Wetland hydrology present?	N	f yes	s, optional wetla	ind site ID:	<u></u>				
Remarks: (Explain alternative procedures	here or in a sepa	rate report.)		<u> </u>					
(		,							
Location	is part of a sup	erfund landf	ill Site, soils a	are highly	variable				
VEGETATION Use scientific nan	nes of plants								
- CSC Scientific Hair	•	olute Domina	an Indicator	Domina	ance Test Worksh	neet			
<u>Tree Stratum</u> (Plot size: 30		over t Speci		1	of Dominant Specie				
1					OBL, FACW, or FAC				
2				Total	Number of Domina	nt			
3				Spec	cies Across all Strat	a: <u>2</u> (B)			
4					of Dominant Specie				
5		0 = Total C		that are 0	OBL, FACW, or FAC	C: <u>0.00%</u> (A/B)			
<u>Sapling/Shrub stratur</u> (Plot size:	15 )	- Total C	ovei	Prevale	nce Index Works	heet			
1					Cover of:				
2				OBL sp	ecies 0 x	1 = 0			
3				FACW	species 0 x	2 = 0			
4				FAC sp		3 = 30			
5		<del> </del>		FACU s	·	4 = 120			
Herb stratum (Plot size:	5 )	0 = Total C	over	UPL spe		5 = 100 A) 250 (B)			
<del></del>		00 V	NI	1	nce Index = B/A =				
Dipsacus fullonum subsp. sylvestris     Solidago canadensis		$\frac{80}{80} = \frac{Y}{Y}$	FACU	Prevale	nce index - b/A -	4.17			
3 Verbascum thapsus		10 N	UPL	Hydrop	hytic Vegetation	Indicators:			
4 Toxicodendron radicans subsp. neg		0 N	FAC	1 -	oid test for hydroph				
5 Verbascum thapsus	1	0 N	UPL	Don	ninance test is >50	0%			
6				Pre	valence index is ≤	3.0*			
7					phogical adaptation				
8					porting data in Re arate sheet)	marks or on a			
10				I — '	arate sneet) blematic hydrophy	tic vegetation*			
		00 = Total C	over		olain)	no vegetation			
Woody vine stratum (Plot size:	30 )			1 — ` `		vetland hydrology must be			
					present, unless disturt	, .,			
2				-	drophytic				
	(	0 = Total C	over	-	etation sent? N				
Remarks: (Include photo numbers here o	r on a senarate ch	eet)		1 '		_			
Transaction (molado prioto fidinaeis fiele o	on a soparate sir								

SOIL Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth Matrix Redox Features

(Inches) 0-18"	<u>Matrix</u>		176	dox Feati	<u> </u>			
0-18"	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
0 10	N/A	100					Pallets	Fill and pallets
	14// (	100					1 unoto	1 ili dila paliete
		<del>                                     </del>						
*Type: C = 0	Concentration, D	= Denleti	on RM = Reduc	ed Matrix	MS = N	Asked S	Sand Grains **Loca	ition: PL = Pore Lining, M = Matrix
	il Indicators:	- Depieti	on, raw – reduc	eu matrix	., 1010 – 10	naskeu c		blematic Hydric Soils:
_	isol (A1)		So	ndy Gleye	ad Matrix	(64)		Redox (A16) (LRR K, L, R)
						(34)		
	ic Epipedon (A2)	)		ndy Redo				(S7) (LRR K, L)
	ck Histic (A3)			ipped Ma		= .		eat or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A			amy Mucl	-			se Masses (F12) (LRR K, L, R)
	itified Layers (A5	5)		amy Gley				Dark Surface (TF12)
	n Muck (A10)			pleted Ma			Other (explain	in remarks)
Dep	leted Below Dar	k Surface	(A11) Re	dox Dark	Surface	(F6)	<del></del>	
Thic	ck Dark Surface	(A12)	De	pleted Da	ırk Surfa	ce (F7)	*Indicators of hy	drophytic vegetation and weltand
—— San	dy Mucky Minera	al (S1)	—— <sub>Re</sub>	dox Depr	essions (	(F8)		t be present, unless disturbed or
—	n Mucky Peat or	Peat (S3	) —					problematic
——	l aver (if absent	od).	-					
	Layer (if observ	eu).					I brabaia a all anno	N
Type:							Hydric soil pres	ent? N
Depth (inche	es):							
HYDROLO	OGY							
Wetland Hy	drology Indicate	ors:						
_	cators (minimum		required; check	all that a	oply)			ndicators (minimum of two required
	Water (A1)	01 0110 10	roquirou, orrook		DDIY/		Secondary I	
	, ,			Aguatic	Fauna (R	13)		
	ter rable (AZ)				Fauna (B		Surfac	e Soil Cracks (B6)
High Wa	n (A3)		_	True Aqu	uatic Plan	nts (B14)	Surfac Draina	ee Soil Cracks (B6) age Patterns (B10)
High Wa Saturatio				True Aqu Hydroge	uatic Plan n Sulfide	nts (B14) Odor (C1	Surface Draina  Dry-Se	ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2)
High Wa Saturatio Water M	arks (B1)		Ξ	True Aqu Hydroge Oxidized	uatic Plan n Sulfide	nts (B14) Odor (C1	Surface Draina Dry-Se Living Roots Surface Crayfi	ce Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8)
High Wa Saturatio Water M Sedimen	arks (B1) it Deposits (B2)		=	True Aqu Hydroge Oxidized (C3)	uatic Plan n Sulfide I Rhizosp	nts (B14) Odor (C1 heres on	Surface Draina Dry-Se Living Roots Satura	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) attion Visible on Aerial Imagery (C9)
High Wa Saturatio Water M Sedimen Drift Dep	arks (B1) at Deposits (B2) posits (B3)		=	True Aqu Hydroge Oxidized (C3) Presence	uatic Plan n Sulfide I Rhizosp e of Redu	nts (B14) Odor (C1 heres on uced Iron	Surface Draina Dry-Se Living Roots Crayfi Satura (C4) Surface Crayfi	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ad or Stressed Plants (D1)
High Wa Saturatio Water M Sedimen Drift Dep Algal Ma	arks (B1) at Deposits (B2) posits (B3) t or Crust (B4)		=	True Aqu Hydroge Oxidized (C3) Presence Recent I	uatic Plan n Sulfide I Rhizosp e of Redu	nts (B14) Odor (C1 heres on uced Iron	Surface Draina Dry-Sc Living Roots Crayfi Satura (C4) Stunte Geom	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep	arks (B1)  Int Deposits (B2)  Int Deposits (B3)  Int or Crust (B4)  Int osits (B5)	al Imagery	(87)	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6)	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu	ots (B14) Odor (C1) heres on uced Iron action in T	Surface Draina Dry-Sc Living Roots Crayfi Satura (C4) Stunte Geom	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) ad or Stressed Plants (D1)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic	arks (B1)  It Deposits (B2)  It Deposits (B3)  It or Crust (B4)  It osits (B5)  It on Aeria		` '	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac	ots (B14) Odor (C1 heres on uced Iron uction in T	Surface Draina Dry-Sc Living Roots Crayfi Satura (C4) Stunte Geom	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely	arks (B1) It Deposits (B2) Posits (B3) It or Crust (B4) Posits (B5) Pon Visible on Aeria Vegetated Conca	ave Surfac	` '	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud Gauge o	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da	ots (B14) Odor (C1 heres on uced Iron uction in T ee (C7) ata (D9)	Surface Draina Dry-Sc Living Roots Crayfi Satura (C4) Stunte Geom FAC-N	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-Si	arks (B1) at Deposits (B2) sosits (B3) at or Crust (B4) sosits (B5) on Visible on Aeria v Vegetated Concatained Leaves (B9	ave Surfac	` '	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud Gauge o	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da	ots (B14) Odor (C1 heres on uced Iron uction in T	Surface Draina Dry-Sc Living Roots Crayfi Satura (C4) Stunte Geom FAC-N	te Soil Cracks (B6) age Patterns (B10) eason Water Table (C2) sh Burrows (C8) ation Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-Si	arks (B1) at Deposits (B2) sosits (B3) at or Crust (B4) sosits (B5) on Visible on Aeria Vegetated Concatained Leaves (B9) vations:	ave Surfac	ee (B8)	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud Gauge o	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in	nts (B14) Odor (C1) heres on uced Iron uction in T ue (C7) ata (D9) Remarks	Surfac Draina Dry-Se Living Roots Crayfi: Satura (C4) Stunte Geom FAC-N	te Soil Cracks (B6) age Patterns (B10) ageason Water Table (C2) sh Burrows (C8) attion Visible on Aerial Imagery (C9) ad or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-St Field Obser Surface wate	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) pon Visible on Aeria at Vegetated Concatained Leaves (B9) vations: er present?	ave Surface  Yes	ee (B8) No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud Gauge o	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i	nts (B14) Odor (C1) heres on uced Iron uction in T ue (C7) ata (D9) Remarks nches):	Surface Draina Dry-Se Living Roots Crayfie Satura (C4) Stunte Geom FAC-N	te Soil Cracks (B6) age Patterns (B10) ageason Water Table (C2) sh Burrows (C8) attion Visible on Aerial Imagery (C9) ad or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-St Field Obser Surface wate	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) pon Visible on Aeria at Vegetated Concatained Leaves (B9) vations: er present? present?	Yes Yes	No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud Gauge o	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i	nts (B14) Odor (C1) heres on uced Iron uction in T te (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Se Living Roots Crayfie Satura (C4) Stunte Geom FAC-N  Wh	te Soil Cracks (B6) age Patterns (B10) ageason Water Table (C2) ash Burrows (C8) attion Visible on Aerial Imagery (C9) ad or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)
High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-Si Field Obser Surface wate Water table Saturation p	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) pon Visible on Aeria by Vegetated Concatained Leaves (B9) rvations: er present? present?	ave Surface  Yes	ee (B8) No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Mud Gauge o	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i	nts (B14) Odor (C1) heres on uced Iron uction in T te (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Se Living Roots Crayfie Satura (C4) Stunte Geom FAC-N  Wh	te Soil Cracks (B6) age Patterns (B10) ageason Water Table (C2) sh Burrows (C8) attion Visible on Aerial Imagery (C9) ad or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-Si Field Obser Surface wate Water table Saturation p (includes cal	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes	No No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i	nts (B14) Odor (C1) heres on uced Iron oction in T se (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Sc Living Roots Crayfi: Satura (C4) Stunte illed Soils Geom FAC-N  Mh	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-Si Field Obser Surface wate Water table Saturation p (includes cal	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes	No No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i	nts (B14) Odor (C1) heres on uced Iron oction in T se (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Se Living Roots Crayfie Satura (C4) Stunte Geom FAC-N  Wh	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-Si Field Obser Surface wate Water table Saturation p (includes cal	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes	No No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i	nts (B14) Odor (C1) heres on uced Iron oction in T se (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Sc Living Roots Crayfi: Satura (C4) Stunte illed Soils Geom FAC-N  Mh	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N
High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-Si Field Obser Surface wate Water table Saturation p (includes cal	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes	No No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i	nts (B14) Odor (C1) heres on uced Iron oction in T se (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Sc Living Roots Crayfi: Satura (C4) Stunte illed Soils Geom FAC-N  Mh	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N
High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-Si Field Obser Surface wate Water table Saturation p (includes cal	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes	No No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i	nts (B14) Odor (C1) heres on uced Iron oction in T se (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Sc Living Roots Crayfi: Satura (C4) Stunte illed Soils Geom FAC-N  Mh	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N
High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-Si Field Obser Surface wate Water table Saturation p (includes cal	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes	No No No	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i	nts (B14) Odor (C1) heres on uced Iron oction in T se (C7) ata (D9) Remarks nches): nches):	Surface Draina Dry-Sc Living Roots Crayfi: Satura (C4) Stunte illed Soils Geom FAC-N  Mh	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N
High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-St  Field Obser Surface wate Water table Saturation p (includes cal Describe rec	arks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) an Visible on Aeria vegetated Concatained Leaves (B9) vations: er present? present? present? pillary fringe)	Yes Yes Yes Yes	No No No e, monitoring wel	True Aqu Hydroge Oxidized (C3) Presence Recent I (C6) Thin Muc Gauge o Other (E	uatic Plan n Sulfide I Rhizosp e of Redu ron Redu ck Surfac r Well Da xplain in Depth (i Depth (i hotos, pi	nts (B14) Odor (C1 heres on uced Iron uction in T ee (C7) ata (D9) Remarks nches): nches): revious in	Surface Draina Dry-Se Living Roots Crayfi: Satura Stunte Geom FAC-N  Mh p  Inspections), if available:	the Soil Cracks (B6) age Patterns (B10) be ason Water Table (C2) sh Burrows (C8) shion Visible on Aerial Imagery (C9) and or Stressed Plants (D1) orphic Position (D2) Neutral Test (D5)  //etland ydrology resent?  N

Project/Site South Dayton Landfill	City/	County: Mo	oraine / Mon	tgomery Sampling Da	ate: 7/23/2013		
Applicant/Owner: CRA		State: Ohio Sampling Point: 8					
Investigator(s): Scott Bush, David Blickwedel		Section, Township, Range:					
Landform (hillslope, terrace, etc.):	Terrace	Local r	elief (concav	re, convex, none):	None		
Slope (%): 0.1 Lat: 39.7	2478	– Long:	84.2216	4 Datum:	WGS84		
Soil Map Unit Name Gp			4WI	Classification:	NA		
Are climatic/hydrologic conditions of the site type	cal for this time o	of the year?	<u>Y</u> (	f no, explain in remarks	5)		
Are vegetation , soil , or	hydrology	significantly	/ disturbed?	Are "normal	circumstances"		
Are vegetation , soil , or	hydrology	naturally pr	oblematic?		present? Yes		
SUMMARY OF FINDINGS				(If needed, explain a	ny answers in remarks.)		
Hydrophytic vegetation present? Y							
Hydric soil present? Y	-	Is the s	ampled are	a within a wetlan	Υ		
Wetland hydrology present?	_	f yes, op	tional wetlar	nd site ID: Quarry	Pond		
Remarks: (Explain alternative procedures here o	r in a separate re	eport.)					
, ,		toric fill So	il				
VEGETATION Use scientific names of	plants.						
	Absolute	Dominan	Indicator	Dominance Test Wo	orksheet		
<u>Tree Stratum</u> (Plot size: <u>30</u>	_) % Cover	t Species	Staus	Number of Dominant S that are OBL, FACW, o			
2				Total Number of Do	`` ′		
3				Species Across all			
4				Percent of Dominant S	Species		
5				that are OBL, FACW, o	or FAC: 100.00% (A/B)		
0 15 404 4 4 4 4 5 4 5	,	= Total Cove	r				
Sapling/Shrub stratum (Plot size: 15	<del></del> )			Prevalence Index W Total % Cover of:	/orksneet		
2				OBL species 40	0 x 1 = 40		
3				FACW species 50			
4				FAC species 0	x 3 = 0		
5				FACU species 10	x 4 = 40		
	0	= Total Cove	r	UPL species 0			
Herb stratum (Plot size: 5	)			Column totals 10	— ` ′     —— ` ′		
1 Cyperus esculentus	30	<u>Y</u>	FACW	Prevalence Index = E	3/A = 1.80		
2 Phyla lanceolata		<u>Y</u> Y	OBL	Hardina mbardia. Va mata	dian Indiantana		
Lythrum salicaria     Lysimachia nummularia	20	<u> </u>	OBL FACW	Hydrophytic Vegeta	drophytic vegetation		
5 Ambrosia artemisiifolia	10		FACU	X Dominance test i	. ,		
6		<del></del>		X Prevalence index			
7				Morphogical ada	ptations* (provide		
8					n Remarks or on a		
9				separate sheet)			
10	100	= Total Cove	r	Problematic hydr (explain)	rophytic vegetation*		
Woody vine stratum (Plot size: 30	)			•	and wetland hydrology must be		
1				present, unless of Hydrophytic	disturbed or problematic		
2		= Total Cove		vegetation			
		- rotal Cove	•	present?	<u>Y</u>		
Remarks: (Include photo numbers here or on a	separate sheet)						
On periodically flooded terrace along	Quarry Pond.						
-							

Depth   Matrix   Redox Features   Clinches   Color (moist) %	Profile Des	cription: (Descri	be to th	e depth needed	to docu	ment the	indicat	or or confirm	the absenc	e of indicators.)
O-18" 10 yr 4/2 98 10 YR 4/4 2 C M sandy loam and grave! Historical fill  Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. "Location: PL = Pare Lining, M = Matrix Hydro Soll Indicators:  Hydro Soll Indicators:  Histo (A2)  Black Histor (A3)  Stroped Matrix (S4)  Sandy Rodox (S5)  Black Histor (A3)  Hydrogen Sulfde (A4)  Strafface (A19)  Depleted Batrix (F2)  2 cm Muck (A10)  Depleted Batrix (F2)  Depleted Batrix (F2)  Thick Dark Surface (A12)  Bandy Nucly Mineral (B1)  Thick Dark Surface (A12)  Depleted Batrix (F2)  Depleted Dark Surface (F2)  Thick Dark Surface (A12)  Depleted Dark Surface (F3)  Thick Dark Surface (A12)  Bandy Nucly Mineral (B1)  Som Mucky Paet or Peat (S3)  Restrictive Layer (f1 observed):  Type:  Depth (inches):  Hydrio soil present?  Wettand Hydrology Indicators:  Hydrio soil present?  Hydrio soil present?  Y  Wettand Hydrology Indicators (minimum of one is required; check all that apply)  Surface Water (A1)  High Water Table (A2)  True Aquation (Tank (B14)  To Adquater Davis (B15)  Softmen (Deposits (B2)  Dorit Deposits (B3)  Algal Mot Of Crust (B4)  Iron Deposits (B1)  Order (Explain in Remarks)  Wettand Invalence of Research and Imagery (B7)  Thin Muck Surface (C7)  Sparsely Vederal Crust (B4)  Iron Deposits (B1)  Order (Explain in Remarks)  Wettand Invalence of Research and Imagery (B7)  Thin Muck Surface (C7)  Sparsely Vederal Concewer Surface (B1)  Order (Explain in Remarks)  Wettand Invalence of R	Depth	<u>Matrix</u>		Red	lox Feat	ures				
"Type: C = Concentration. D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. "Location: PL = Pere Lining, M = Matrix Hydric Soil Indicators:    Histic Epipadon (A2)	(Inches)	Color (moist)	%	Color (moist)	%	Туре*	Loc**	Textu	re	Remarks
"Type: C = Concentration. D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. "Location: PL = Pore Lining, M = Matrix Hydric Soil Indicators:    Histic Epipadon (A2)	0-18"	10 vr 4/2	98	10YR 4/4	2	С	М	sandy loam	and gravel	Historical fill
Hydric Soil Indicators:		,						,	J	
Hydric Soil Indicators:										
Hydric Soil Indicators:										
Hydric Soil Indicators:										
Hydric Soil Indicators:										
Hydric Soil Indicators:										
Hydric Soil Indicators:						<b>-</b>				
Hydric Soil Indicators:										
Hydric Soil Indicators:										
Histsol (A1) Sandy Gleyed Matrix (S4) Coast Praire Redox (A16) (LRR K, L, R)  Histic Epipedon (A2) Sandy Redox (S5) Dark Surface (S7) (LRR K, L, R)  Black Histic (A3) Stripped Matrix (S6) 5 orn Mucky Peter or Peat (S3) (LRR K, L, R)  Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Iron-Manganese Masses (F12) (LRR K, L, R)  2 orn Muck (A10) Zoen Muck (A10) Zoepleted Matrix (F2) Very Shallow Dark Nacce (F12)  2 orn Muck (A10) Redox Dark Surface (F2) Urey Shallow Dark Nacce (F12)  3 Depleted Below Dark Surface (A12) Depleted Dark Surface (F7)  Thick Dark Surface (A12) Depleted Dark Surface (F7)  Sandy Mucky Mineral (S1) Redox Dark Surface (F7)  Som Mucky Peat or Peat (S3)  Restrictive Layer (If observed):  Type: Prince (If observed):  Type: Prince (If observed):  Hydric soil present? Y  Wetland Hydrology Indicators:  Primary Indicators (minimum of one is required; check all that apply)  Surface Water (A1) Aquatic Fauna (B13) Surface (B14)  High Water Table (A2) True Aquatic Plants (B14)  High Water Table (A2) Doubled Rhizespheres on Living Roots  Section (A3) Hydrogen Sulfice Odor (C1) Dry-Season Water Table (C2)  Water Marks (B1) Ocidized Rhizespheres on Living Roots  Seturation (A3) Hydrogen Sulfice Odor (C1) Dry-Season Water Table (C2)  Seturation (A3) Hydrogen Sulfice Odor (C1) Seture (C4) Seture (C7)  Seturation (A3) Recent from Reduction in Titled Solis  Seturation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9)  Other (Explain in Remarks)  Field Observations:  Surface water (A1) Recent from Reduction in Titled Solis  Geomorphic Position (D2)  FAC-Neutral Test (D5)  Field Observations:  Surface water present? Yes No Depth (inches): 4 Wetland hydrology present? Yes No Depth (inches): 4 Pythology Present?	*Type: C = 0	Concentration, D =	= Depleti	ion, RM = Reduce	ed Matrix	, MS = N	1asked S	and Grains.	**Locatio	n: PL = Pore Lining, M = Matrix
Histic Epipedon (A2)  Black Histic (A3)  Black Histic (A3)  Stripped Matrix (S6)  Hydrogen Sulfide (A4)  Loamy Mucky Mineral (F1)  Stratified Layers (A5)  Loamy Mucky Mineral (F2)  2 cm Muck (A10)  Depleted Below Dark Surface (A11)  Redox Dark Surface (F12)  Depleted Below Dark Surface (A12)  Depleted Dark Surface (A11)  Redox Dark Surface (F3)  Thick Dark Surface (A12)  Sandy Mucky Mineral (S1)  Sandy Mucky Mineral (S1)  Redox Depressions (F8)  Princk Dark Surface (A12)  Sandy Mucky Mineral (S1)  Redox Depressions (F8)  Princk Dark Surface (A12)  Redox Depressions (F8)  Princk Dark Surface (A12)  Redox Depressions (F8)  Princk Dark Surface (A12)  Redox Depressions (F8)  Princk Dark Surface (A11)  Redox Depressions (F8)  Princk Dark Surface (A12)  Redox Depressions (F8)  Princk Dark Surface (A11)  Princk Dark Surface (A11)  Redox Depressions (F8)  Princk Dark Surface (A11)  Princk Dark Surface (A11)  Redox Depressions (F8)  Princk Dark Surface (A11)  Redox Depressions (F8)  Princk Dark Surface (A11)  Princk Dark Surface (A11)  Redox Depressions (F8)  Princk Dark Surface (A11)  Princk Dark Surface (A11)  Princk Dark Surface (A11)  Redox Depressions (B10)  Princk Dark Surface (A11)  Princk Dark Surfac	Hydric Sc	il Indicators:						Indicators	for Proble	ematic Hydric Soils:
Black Histic (A3)   Stripped Matrix (S8)   5 cm Mucky Peat or Peat (S3) (LRR K, L, R)   Hydrogen Sulfide (A4)   Loamy Mucky Mineral (F1)   Iron-Manganese Masses (F12) (LRR K, L, R)   Very Shallow Dark Surface (TF12)   2 cm Muck (A10)   X Depleted Matrix (F2)   Very Shallow Dark Surface (TF12)   Other (explain in remarks)   Other (exp	Hist	tisol (A1)		San	dy Gleye	ed Matrix	(S4)	Coast	Prairie Red	dox (A16) ( <b>LRR K, L, R</b> )
Hydrogen Suffide (A4)	Hist	tic Epipedon (A2)		San	dy Redo	x (S5)		Dark S	Surface (S7	') (LRR K, L)
Stratified Layers (A5)	Blad	ck Histic (A3)		—— Stri	oped Ma	trix (S6)		5 cm	Mucky Pea	t or Peat (S3) ( <b>LRR K, L, R</b> )
2 cm Muck (A10)	— <sub>Hyd</sub>	lrogen Sulfide (A4	1)	—— <sub>Loa</sub>	my Mucl	ky Minera	al (F1)	—— Iron-M	1anganese	Masses (F12) (LRR K, L, R)
2 cm Muck (A10)	Stra	atified Layers (A5)	· )	—— <sub>Loa</sub>	my Gley	ed Matrix	(F2)	—Very S	Shallow Da	rk Surface (TF12)
Depleted Below Dark Surface (A11) Thick Dark Surface (A12) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Sandy Mucky Mineral (S1) Some Mucky Peat or Peat (S3)  Restrictive Layer (if observed): Type: Depth (inches):  Remarks:  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) High Water Table (A2) High Water Table (A2) True Aquatic Plants (B1) Hydrogen Sulfide Odor (C1) Sediment Deposits (B2) Sediment Deposits (B2) C(3) Algal Mat or Crust (B4) From Experiment (B4) Recent from Reduction in Tilled Soils Find Observations:  Remerks:  Remarks:  Wetland Hydrology Indicators  Wetland Hydrology Indicators  Wetland Hydrology Indicators (minimum of two required) Secondary Indicators (minimum of two required) Surface Soil Cracks (B6) Drainage Patterns (B10) Drainage Patterns (B10) Drainage Patterns (B10) Dry-Season Water (A1) Drainage Patterns (B10) Dry-Season Water Table (C2) Dry-Season Water Table (C2) Sediment Deposits (B2) Sediment Deposits (B2) Sediment Deposits (B2) C(3) Presence of Reduced Iron (C4) Stunted or Stressed Plants (D1) Algal Mat or Crust (B4) Recent from Reduction in Tilled Soils (C6) FAC-Neutral Test (D5) FININGATION (Sible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface water present? Yes No Depth (inches): Wetland hydrology present? Y (includes capillary fringe)  Describe recorded data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:				X Dep	leted Ma	atrix (F3)				
Thick Dark Surface (A12)		leted Below Dark	Surface	(A11) — Red	lox Dark	Surface	(F6)			·
Sandy Mucky Mineral (S1) Redox Depressions (F8) hydrology must be present, unless disturbed or problematic  Restrictive Layer (if observed): Type: Hydric soil present? Y  Depth (inches):  Remarks:  HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required) Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6) High Water Table (A2) True Aquatic Plants (B14) Drainage Patterns (B10)  X Saturation (A3) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Water Marks (B1) Oxidized Rhizospheres on Living Roots Crayfish Burrows (C8) Sediment Deposits (B2) (C3) Saturation (C4) Saturation Visible on Aerial Imagery (C9) Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils Geomorphic Position (D2) Iron Deposits (B5) Recent Iron Reduction in Tilled Soils Geomorphic Position (D2) Iron Deposits (B5) Gauge or Well Data (D9) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations:  Surface water present? Yes No Depth (inches): Wetland hydrology present? Yes No Depth (inches): Hydrology				· · · · · · · · · · · · · · · · · · ·	leted Da	rk Surfa	ce (F7)	*Indicat	ors of hydr	ophytic vegetation and weltand
Restrictive Layer (if observed): Type: Type: Remarks:  Hydric soil present?  Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6) Hydrogen Sulfide Odor (C1) True Aquatic Plants (B14) True Aquatic Plants (B15) Sediment Deposits (B2) Sediment Deposits (B2) Orift Deposits (B2) Drift Deposits (B2) True Aquatic Plants (B16) True Aquatic Plants (B17) Sediment Deposits (B2) Sediment Deposits (B2) True Aquatic Plants (B17) Sediment Deposits (B2) True Aquatic Plants (B18) True Aquatic Plants (B19) True Aquati				·						
Restrictive Layer (if observed): Type: Depth (inches):  Remarks:  HYDROLOGY  Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Aquatic Fauna (B13) High Water Table (A2) High Water Table (A2) True Aquatic Plants (B14) Tyrue Aquatic Plants (B14) Tyrue Aquatic Plants (B14) Water Marks (B1) Sufface Soil Cracks (B6) Drainage Patterns (B10) Surface Water (A1) Advatic Fauna (B13) Water Marks (B1) Oxidized Rhizospheres on Living Roots Sediment Deposits (B2) Sediment Deposits (B3) Presence of Reduced Iron (C4) Algal Mat or Crust (B4) Iron Deposits (B3) Presence of Reduced Iron (C4) Surface Water (B4) Geomorphic Position (D2) FAC-Neutral Test (D5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Water-Stained Leaves (B9) Third Muck Surface (C7) Sparsely Vegetated Concave Surface (B8) Water-Stained Leaves (B9) Third Muck Surface (C7) Satisated Leaves (B9) Third Muck Surface (C7) Sparsely Present? Yes No Depth (inches): Wetland hydrology Present? Yes No Depth (inches): Wetland hydrology Present? Yes Ro Depth (inches): Hydric soil present? Yes No Depth (inches): Wetland hydrology Present? Yes Ro Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			` '				/	,,,		•
Type: Depth (inches):		•	•	<u> </u>						,
Depth (inches):    Remarks:		Layer (if observe	ea):							
HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one is required; check all that apply)  Surface Water (Ar1)  High Water Table (A2)  True Aquatic Plants (B14)  X Saturation (A3)  Water Marks (B1)  Sediment Deposits (B2)  Drift Deposits (B3)  Algal Mat or Crust (B4)  Algal Mat or Crust (B4)  Fresence of Reduced Iron (C4)  Algal Mat or Crust (B5)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Tield Observations:  Surface Water Indicators (minimum of two required)  Secondary Indicators (minimum of two required)  Surface Soil Cracks (B6)  Drift poposits (B10)  Dry-Season Water Table (C2)  Trayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Stunted or Stressed Plants (D1)  Geomorphic Position (D2)  FAC-Neutral Test (D5)  FAC-Neutral Test (D5)  Field Observations:  Surface water present?  Yes  No  Depth (inches):  Wetland  hydrology  present?  Yes  No  Depth (inches):  Wetland  hydrology  present?  Yes  No  Depth (inches):  Geomorphic Positions), if available:  Remarks:						•		Hyaric s	oli presen	t? <u> </u>
HYDROLOGY  Wetland Hydrology Indicators:  Primary Indicators (minimum of one is required; check all that apply)  Surface Water (A1)  High Water Table (A2)  True Aquatic Plants (B14)  True Aquatic Plants (B14)  Faturation (A3)  Water Marks (B1)  Sediment Deposits (B2)  Drift Deposits (B3)  Presence of Reduced Iron (C4)  Algal Mat or Crust (B4)  Find Muck Surface (C7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Thin Muck Surface (C7)  Sparsely Vegetated Concave Surface (B8)  Gauge or Well Data (D9)  Water-Stained Leaves (B9)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:	Depth (inche	es):								
Primary Indicators (minimum of one is required; check all that apply)   Secondary Indicators (minimum of two required)	Remarks:									
Primary Indicators (minimum of one is required; check all that apply)   Secondary Indicators (minimum of two required)										
Wetland Hydrology Indicators:         Primary Indicators (minimum of one is required; check all that apply)       Secondary Indicators (minimum of two required)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         X Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C9)         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Water-Stained Leaves (B9)       Wetland         Field Observations:       Ves       No       Depth (inches):       Wetland         Surface Soil Cracks (B6)       Hydrogens Surface (C6)       Mydrology         Surface Soil Cracks (B6)       Hydrogens Surface (C7)       Hydrogens Surface										
Wetland Hydrology Indicators:         Primary Indicators (minimum of one is required; check all that apply)       Secondary Indicators (minimum of two required)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         X Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C9)         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Water-Stained Leaves (B9)       Wetland         Field Observations:       Ves       No       Depth (inches):       Wetland         Surface Soil Cracks (B6)       Hydrogens Surface (C6)       Mydrology         Surface Soil Cracks (B6)       Hydrogens Surface (C7)       Hydrogens Surface										
Wetland Hydrology Indicators:         Primary Indicators (minimum of one is required; check all that apply)       Secondary Indicators (minimum of two required)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         X Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C9)         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Water-Stained Leaves (B9)       Wetland         Field Observations:       Ves       No       Depth (inches):       Wetland         Surface Soil Cracks (B6)       Hydrogens Surface (C6)       Mydrology         Surface Soil Cracks (B6)       Hydrogens Surface (C7)       Hydrogens Surface										
Wetland Hydrology Indicators:         Primary Indicators (minimum of one is required; check all that apply)       Secondary Indicators (minimum of two required)         Surface Water (A1)       Aquatic Fauna (B13)       Surface Soil Cracks (B6)         High Water Table (A2)       True Aquatic Plants (B14)       Drainage Patterns (B10)         X Saturation (A3)       Hydrogen Sulfide Odor (C1)       Dry-Season Water Table (C2)         Water Marks (B1)       Oxidized Rhizospheres on Living Roots       Crayfish Burrows (C8)         Sediment Deposits (B2)       (C3)       Saturation Visible on Aerial Imagery (C9)         Drift Deposits (B3)       Presence of Reduced Iron (C4)       Stunted or Stressed Plants (D1)         Algal Mat or Crust (B4)       Recent Iron Reduction in Tilled Soils       Geomorphic Position (D2)         Iron Deposits (B5)       (C6)       FAC-Neutral Test (D5)         Inundation Visible on Aerial Imagery (B7)       Thin Muck Surface (C7)       FAC-Neutral Test (D5)         Sparsely Vegetated Concave Surface (B8)       Gauge or Well Data (D9)       Water-Stained Leaves (B9)       Wetland         Field Observations:       Ves       No       Depth (inches):       Wetland         Surface Soil Cracks (B6)       Hydrogens Surface (C6)       Mydrology         Surface Soil Cracks (B6)       Hydrogens Surface (C7)       Hydrogens Surface	HYDROLO	OGY								
Primary Indicators (minimum of one is required; check all that apply)  Surface Water (A1)  High Water Table (A2)  True Aquatic Plants (B14)  Saturation (A3)  Water Marks (B1)  Drift Deposits (B3)  Algal Mat or Crust (B4)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water Testane (B8)  Water Testane (B8)  Depth (inches):  Water table present?  Yes  No  Depth (inches):  Water Marks:  Remarks:  Secondary Indicators (minimum of two required)  Surface Soil Cracks (B6)  Drainage Patterns (B10)  Dray-Season Water Table (C2)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Stunted or Stressed Plants (D1)  Geomorphic Position (D2)  FAC-Neutral Test (D5)			rs:							
Surface Water (A1)  High Water Table (A2)  True Aquatic Fauna (B13)  X Saturation (A3)  Water Marks (B1)  Sediment Deposits (B2)  Drift Deposits (B3)  Presence of Reduced Iron (C4)  Iron Deposits (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Field Observations:  Surface water present?  Surface water present?  Yes  No  Depth (inches):  Saturation Visible on Aerial Imagery (Part (Inches)):  Saturation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Field Observations:  Surface water present?  Yes  No  Depth (inches):  Surface (C7)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Aquatic Fauna (B13)  Drainage Patterns (B10)  Dry-Season Water (B10)  Dry-Season Water (B10)  Dry-Season Water Table (C2)  Crayfish Burrows (C8)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Stunted or Stressed Plants (D1)  Stunted or Stressed Plants (D1)  Geomorphic Position (D2)  FAC-Neutral Test (D5)  FAC-Neutral Test (D5)  Wetland  hydrology  present?  Y  Wetland  hydrology  present?  Y  Remarks:	_			roquired: abook	all that a	nnlu)		S.a.	andanı lad	is atoms (mainime) man of the area coinsed)
High Water Table (A2)  True Aquatic Plants (B14)  Water Marks (B1)  Sediment Deposits (B2)  Drift Deposits (B3)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Field Observations:  Surface water present?  Water table present?  Yes  No  Depth (inches):  Water Marks (B1)  Dry-Season Water Table (C2)  Dry-Season Water Table (C2)  Crayfish Burrows (C8)  Saturation Visible on Aerial Imagery (C9)  Saturation Visible on Aerial Imagery (C9)  Stunted or Stressed Plants (D1)  Seemarks:  Wettand Tydrology  Present?  Wetland hydrology  Present?  Yes  No  Depth (inches):  Wetland hydrology  Present?  Yes  Remarks:			or one is	required, check			42\	<u> 5ec</u>		
X Saturation (A3)						•	,			
Water Marks (B1) Sediment Deposits (B2) Orift Deposits (B3) Presence of Reduced Iron (C4) Algal Mat or Crust (B4) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Water-Stained Leaves (B9)  Field Observations: Surface water present? Ves No Depth (inches): Saturation Visible on Aerial Imagery (B7) Saturation present? Saturation present? Ves No Depth (inches): Saturation Visible on Aerial Imagery (C9) Sparsely Vegetated Concave Surface (B8) Surface water present? Ves No Depth (inches): Saturation present? Ves No Saturation present? Ves No Saturation present? Ves Saturation		, ,						_		
Sediment Deposits (B2)  Drift Deposits (B3)  Presence of Reduced Iron (C4)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Field Observations:  Surface water present?  Yes  No  Depth (inches):  Saturation Visible on Aerial Imagery (C9)  Stunted or Stressed Plants (D1)  Geomorphic Position (D2)  FAC-Neutral Test (D5)  Wetland  hydrology  present?  Yes  No  Depth (inches):  Saturation present?  Yes  Saturation present?								·		
Drift Deposits (B3)  Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Field Observations:  Surface water present?  Water table present?  Yes  No  Depth (inches):  Saturation present?  Yes  X  No  Depth (inches):  Saturation present?  Yes  X  No  Depth (inches):  Saturation present?  Yes  X  No  Depth (inches):  Secribe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:		` '				RillZusp	neres on	LIVING KOOLS		
Algal Mat or Crust (B4)  Iron Deposits (B5)  Inundation Visible on Aerial Imagery (B7)  Sparsely Vegetated Concave Surface (B8)  Water-Stained Leaves (B9)  Field Observations:  Surface water present?  Yes  No  Depth (inches):  Saturation present?  Yes  X  No  Depth (inches):  Saturation present?  Yes  X  No  Depth (inches):  Saturation present?  Yes  X  No  Depth (inches):  Seturation present?  Yes  Yes  Remarks:						a of Radi	iced Iron	(C4) —		
Iron Deposits (B5) (C6) FAC-Neutral Test (D5) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface water present? Yes No Depth (inches): Wetland hydrology Saturation present? Yes No Depth (inches): 4 present? Yes Saturation present? Yes No Depth (inches): 4 present? Yes Saturation present? Yes No Depth (inches): 4 present? Yes Saturation present? Yes		` '						· ·		
Inundation Visible on Aerial Imagery (B7) Sparsely Vegetated Concave Surface (B8) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface water present? Yes No Depth (inches): Wetland Water table present? Yes No Depth (inches): Saturation present? Yes X No Depth (inches): Yes Ano Depth (inches): Yes Ano Depth (inches): Wetland hydrology present? Yes (includes capillary fringe)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:						ion ixeau	CHOITHI			
Sparsely Vegetated Concave Surface (B8) Water-Stained Leaves (B9) Other (Explain in Remarks)  Field Observations: Surface water present? Water table present? Yes No Depth (inches): Saturation present? Yes X No Depth (inches): Yes X No Depth (inches): Yes Y Saturation present? Yes X No Depth (inches): Y Security present? Y Security present. Y Security presen			l Imagery	(B7) —	` ′	ck Surfac	e (C7)			and rest (Bo)
Water-Stained Leaves (B9)  Other (Explain in Remarks)  Field Observations:  Surface water present? Yes No Depth (inches): Wetland hydrology Saturation present? Yes X No Depth (inches): 4 present? Yes (includes capillary fringe)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:			• .	· ·						
Field Observations:  Surface water present? Yes No Depth (inches): Wetland Water table present? Yes No Depth (inches): hydrology Saturation present? Yes X No Depth (inches): 4  (includes capillary fringe)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:		-					` /	1		
Surface water present? Yes No Depth (inches): Wetland hydrology present? Yes X No Depth (inches): 4 present? Yes X No Depth (inches): 4 present? Yes X No Depth (inches): 4 present? Yes acrial photos, previous inspections), if available:  Remarks:		, ,	<u>'</u>					,		
Water table present? Yes No Depth (inches): hydrology present? Yes X No Depth (inches): 4 Present? Y  (includes capillary fringe)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:			Vec	No		Denth /i	nchee).		Wet	land
Saturation present? Yes X No Depth (inches): 4 present? Y (includes capillary fringe)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:		•								
(includes capillary fringe)  Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:		•							-	= -
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:			163			- - 20pui (i	<i></i>			<del>'</del>
Remarks:				n manifesiaa II	ooriel	hotos :::	rovione !:	apportions) :f =	voilable:	
	Describe red	orded data (strea	ım gauge	e, monitoring well	, аепагр	notos, pi	evious ir	ispections), if a	ivaliable:	
										l
	Remarks:									
Palustrine, emergent, scrub shrub, associated with a swale and low terrace	T. Comanto.									l
Palustrine, emergent, scrup snrup, associated with a swale and low terrace	D-1			and a second	al					l
	Faiustrin	e, emergent, s	บเนม รัก	iiub, associate	u WILN 8	swale	and lov	и сенасе		

SOIL **Sampling Point:** Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) Depth Matrix Redox Features (Inches) Color (moist) % Color (moist) Type\* Loc\*\* Texture Remarks 0-18" LS w/ 20% gravel 10 yr 4/4 Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. \*\*Location: PL = Pore Lining, M = Matrix **Hydric Soil Indicators:** Indicators for Problematic Hydric Soils: Sandy Gleyed Matrix (S4) Coast Prairie Redox (A16) (LRR K, L, R) Histisol (A1) Histic Epipedon (A2) Sandy Redox (S5) Dark Surface (S7) (LRR K, L) Black Histic (A3) Stripped Matrix (S6) 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) Iron-Manganese Masses (F12) (LRR K, L, R) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) Stratified Layers (A5) Loamy Gleyed Matrix (F2) Very Shallow Dark Surface (TF12) Depleted Matrix (F3) 2 cm Muck (A10) Other (explain in remarks) Depleted Below Dark Surface (A11) Redox Dark Surface (F6) Thick Dark Surface (A12) Depleted Dark Surface (F7) \*Indicators of hydrophytic vegetation and weltand Sandy Mucky Mineral (S1) Redox Depressions (F8) hydrology must be present, unless disturbed or 5 cm Mucky Peat or Peat (S3) problematic Restrictive Layer (if observed): Type: Hydric soil present? Depth (inches): Remarks: **HYDROLOGY** Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) Secondary Indicators (minimum of two required) Surface Water (A1) Aquatic Fauna (B13) Surface Soil Cracks (B6) True Aquatic Plants (B14) Drainage Patterns (B10) High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (C1) Dry-Season Water Table (C2) Water Marks (B1) Oxidized Rhizospheres on Living Roots Crayfish Burrows (C8) Sediment Deposits (B2) (C3)Saturation Visible on Aerial Imagery (C9) Drift Deposits (B3) Presence of Reduced Iron (C4) Stunted or Stressed Plants (D1) Algal Mat or Crust (B4) Recent Iron Reduction in Tilled Soils Geomorphic Position (D2) (C6)FAC-Neutral Test (D5) Iron Deposits (B5) Inundation Visible on Aerial Imagery (B7) Thin Muck Surface (C7) Sparsely Vegetated Concave Surface (B8) Gauge or Well Data (D9) Water-Stained Leaves (B9) Other (Explain in Remarks) Field Observations: Surface water present? Wetland Yes Nο Depth (inches): hydrology Water table present? Yes No Depth (inches): present? Saturation present? Depth (inches): Ν Yes Nο (includes capillary fringe) Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:

Project/Site South Dayton Landfill		City/	County:	Moraine / Mon	tgomery	Sampling Date:	7/22/2013	
Applicant/Owner: CRA			State: Ohio Sampling Point: 10					
Investigator(s): Scott Bush, David Blicky	vedel		Section, Township, Range:					
Landform (hillslope, terrace, etc.):	Terrace	Hillside	Loca	al relief (concav	ve, convex	, none):	None	
Slope (%): Lat:	39.72456		– Long:	84.2245	54	Datum:	WGS84	
Soil Map Unit Name Gp				1WI (	Classificati	ion:	NA	
Are climatic/hydrologic conditions of the	site typical fo	r this time o	f the year	? Y (	If no, expla	nin in remarks)		
Are vegetation , soil	, or hydro	logy	significa	ntly disturbed?		Are "normal circu	mstances"	
Are vegetation , soil	, or hydro	logy	naturally	problematic?			present? Yes	
SUMMARY OF FINDINGS	'				(If need	ed, explain any an	swers in remarks.)	
Hydrophytic vegetation present?	N							
Hydric soil present?	N		ls th	e sampled are	a within a	wetlan N		
Wetland hydrology present?	N		f yes,	optional wetlar	nd site ID:			
Remarks: (Explain alternative procedure	s here or in a	separate re	port.)					
		•		''				
		HIS	toric fill s	SOII				
VEGETATION Use scientific nar	nes of plar	ıts.						
		Absolute	Domina		Domina	ince Test Worksh	neet	
Tree Stratum (Plot size:	)	% Cover	t Specie		1	of Dominant Specie		
1 Robinia pseudoacacia 2		10	Y	FACU_	1	DBL, FACW, or FAC		
3						Number of Domina ies Across all Strat		
4					1	of Dominant Specie		
5						OBL, FACW, or FAC		
		10	= Total Co	ver				
<u>Sapling/Shrub stratur</u> (Plot size:		)				nce Index Works	heet	
1 Diervilla Ionicera		75	Y	NI		Cover of:	4 0	
2					OBL spe		1 = 0 $2 = 0$	
4					FAC spe		3 = 75	
5					FACU s		4 = 120	
		75	= Total Co	ver	UPL spe	ecies 0 x	5 = 0	
<u>Herb stratum</u> (Plot size:		)			Column	totals 55 (/	A) 195 (B)	
1 Ipomoea purpurea		10	Υ	FACU	Prevaler	nce Index = B/A =	3.55	
2 Celtis occidentalis		10	Y	FAC	L			
3 Vitis aestivalis		10	<u>Y</u>	FACU FAC		hytic Vegetation		
4 Nepeta cataria 5 Alliaria petiolata		5		FAC FAC	I ——	oid test for hydroph ninance test is >50		
6					I —	valence index is ≤		
7					Mor	phogical adaptation	ons* (provide	
8						porting data in Re		
9					I — '	arate sheet)		
10		45	= Total Co			blematic hydrophy blain)	tic vegetation*	
Woody vine stratum (Plot size:		)——	- Total Oc	VC1	1 — "		vetland hydrology must be	
1						present, unless disturb	,	
2				_	-	Irophytic		
		0	= Total Co	ver		etation sent? N	_	
Remarks: (Include photo numbers here o	or on a separ	ate sheet)			•			

Profile Desc	cription: (Descri	be to th	e depth needed	to docu	ment the	indicat	tor or confirm th	ne absence	of indicators.)
Depth	<u>Matrix</u>		Red	dox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	e	Remarks
0-6"	10 yr 3/3						Sil w/ gravel 5	5%	
6-12"	10yr 4/4						Clay		
12-18"	10 yr 4/6					<del>                                     </del>	Clay w/ Grave	ol 50/	
12-10	10 yl 4/0						Clay W/ Grave	31 3 70	
*Tup a: C = C	Concentration D	- Donloti	on DM - Dadua	l Matrix	140 - 1	Maakad S	Cand Crains	**! cootion:	PL = Pore Lining, M = Matrix
	il Indicators:	- Depleti	on, RM = Reduce	ed Matrix	, IVIS – IV	nasked 3			natic Hydric Soils:
_	isol (A1)		San	dy Glay	ed Matrix	(84)			x (A16) (LRR K, L, R)
	ic Epipedon (A2)			idy Gleye idy Redo		. (34)		urface (S7) (	
	ck Histic (A3)			pped Ma					r Peat (S3) ( <b>LRR K, L, R</b> )
	rogen Sulfide (A4	1)			ky Minera	J /E1)		-	asses (F12) (LRR K, L, R)
	itified Layers (A5)	•		-	ed Matrix				Surface (TF12)
	n Muck (A10)	,		-	atrix (F3)			explain in re	
	leted Below Dark	Surface			Surface			OAPIANI III 16	
	ck Dark Surface (		· · · —		rk Surface		*Indicata	ore of hydron	hytic vegetation and weltand
	dy Mucky Minera	-			essions (				present, unless disturbed or
	n Mucky Peat or			ox Dopi	00010110 (	(10)	Tryaroto		oblematic
		·	<u> </u>					r.	
	Layer (if observe	ea):					l brahmin na	ail muanami?	N.
Type:	- \-				•		Hyaric so	oil present?	N
Depth (inche	es):				•				
Remarks:									
HYDROLO	OGY								
Wetland Hy	drology Indicate	rs:							
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Seco	ondary Indica	ators (minimum of two required)
	Water (A1)				Fauna (B	13)			il Cracks (B6)
	ter Table (A2)				uatic Plan				atterns (B10)
Saturation	on (A3)			Hydroge	n Sulfide	Odor (C	<u> </u>	Dry-Seasor	n Water Table (C2)
Water M	arks (B1)			Oxidized	l Rhizosp	heres on	Living Roots	Crayfish Bu	ırrows (C8)
Sedimen	t Deposits (B2)			(C3)					Visible on Aerial Imagery (C9)
	osits (B3)				e of Redu		` ′	_	Stressed Plants (D1)
	t or Crust (B4)				ron Redu	ction in T	Filled Soils		c Position (D2)
	osits (B5)		(0.7)	(C6)		(07)		FAC-Neutra	al Test (D5)
	on Visible on Aeria		· ,	-	ck Surfac				
	Vegetated Conca tained Leaves (B9)		e (B8)		r Well Da	` '	. \		
		)		Other (E	xplain in	Remarks	·)	_	
Field Obser		V	A I =		Dante "	n a b = a \ :		18/-41-	nd
Surface wate	•	Yes	—— No		Depth (i			Wetla	
Water table Saturation p		Yes Yes	No		Depth (i Depth (i			hydro prese	
	pillary fringe)	163			Dehm (i	1101163).		prese	
		m garra	monitoring well	aerial -	hotos s	revieus :	nepections) if =:	(ailabla:	
Describe rec	orueu uata (strea	ını gauge	e, monitoring well	, аепагр	notos, pi	evious II	nspections), if av	raliable.	
Remarks:									

Project/Site South Dayton Landfill	City	/County: N	oraine / Mon	itgomery	Sampling Date:	7/22/2013		
Applicant/Owner: CRA		State:	11					
Investigator(s): Scott Bush, David Blickwedel		Section, Township, Range:						
Landform (hillslope, terrace, etc.):	slope	Local	None					
Slope (%): 0 Lat: 39.723	305	— Long:	84.2237	73	Datum:	WGS 84		
Soil Map Unit Name GP			1WI	Classificat	ion:	NA		
Are climatic/hydrologic conditions of the site typica	I for this time	of the year?	<u> </u>	If no, expla	ain in remarks)			
Are vegetation , soil , or hyd	drology	significant	ly disturbed?		Are "normal circu	mstances"		
Are vegetation , soil , or hyd	drology	- naturally p	roblematic?		, no nomial once	present? Yes		
SUMMARY OF FINDINGS		•		(If need	ed, explain any ar	nswers in remarks.)		
Hydrophytic vegetation present? N								
Hydric soil present? N		Is the	sampled are	a within a	wetlan N			
Wetland hydrology present?		f yes, o	ptional wetla	nd site ID:				
Remarks: (Explain alternative procedures here or i	n a senarate r	eport )						
Tromano. (Explain altomative procedures here si	•	storic fill so	oil					
VEGETATION Use scientific names of p	lants.							
	Absolute	Dominan	Indicator	Domina	ance Test Worksl	neet		
<u>Tree Stratum</u> (Plot size:)	% Cover	t Species	Staus	Number	of Dominant Specie	es		
1 Ulmus pumila	5	<u> </u>	UPL	that are	OBL, FACW, or FA	C:(A)		
2					Number of Domina			
3				1 .	cies Across all Strat	``		
5					of Dominant Specie OBL, FACW, or FA			
		= Total Cove	er		000, , , , , , , , , , , , , , , , , ,	(/ (/ 1/2)		
<u>Sapling/Shrub straturr</u> (Plot size: 15	)			Prevale	ence Index Works	sheet		
1 Diervilla lonicera	50	Y	NI	Total %	Cover of:			
2 Rhamnus lanceolata	10	N	NI	OBL sp		1 = 0		
3	_			FACW	·	2 = 0		
4	_			FAC sp		3 = 15		
5	60	= Total Cove		FACU s	·	4 = <u>368</u> 5 = 25		
Herb stratum (Plot size: 5	)	-	o i	Column		A) 408 (B)		
1 Digitaria sanguinalis	<b>—</b> ′ 80	Υ	FACU	1	nce Index = B/A =	, <u> </u>		
2 Ambrosia artemisiifolia	10		FACU			1.00		
3 Medicago lupulina	5	N	FAC	Hydrop	hytic Vegetation	Indicators:		
4 Oxalis corniculata	2	N	FACU	1	oid test for hydropl			
5					minance test is >5			
6				Pre	valence index is ≤	3.0*		
					rphogical adaptation			
89					porting data in Re arate sheet)	marks or on a		
10		· ——		<b>—</b>	blematic hydrophy	tic vegetation*		
	97	= Total Cove	 er		plain)	, no vegetation		
Woody vine stratum (Plot size:1	)				ors of hydric soil and v present, unless disturl	wetland hydrology must be bed or problematic		
2		·			drophytic			
	0	= Total Cove	er er	1 -	getation sent? N			
Remarks: (Include photo numbers here or on a se	parate sheet)			1				
	,							

Profile Desc	cription: (Descri	be to th	e depth needed	to docu	ment the	indicat	or or confirm	the absenc	e of indicators.)
Depth	<u>Matrix</u>		Red	lox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	ire	Remarks
0-12"	10yr 3/3						Silt and grav	/el	
12" +							refusal		Well Drained Gravel
·							10,4041		view Bramea Graver
L					L	<u> </u>			
	Concentration, D =	Depleti	on, RM = Reduce	ed Matrix	, MS = N	lasked S			n: PL = Pore Lining, M = Matrix
1 -	il Indicators:		0	d. 01	1	(0.4)			ematic Hydric Soils:
·	isol (A1)				ed Matrix	(54)			lox (A16) (LRR K, L, R)
	ic Epipedon (A2)			dy Redo					) (LRR K, L)
ı <u>—</u>	ck Histic (A3)	13		oped Ma	, ,	1 (54)			or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A4			-	ky Minera			-	Masses (F12) (LRR K, L, R)
	tified Layers (A5)			-	ed Matrix				k Surface (TF12)
	n Muck (A10)	Curtosa			atrix (F3)		— Other	(explain in	remarks)
	leted Below Dark		· · · —		Surface		#1 F		
	ck Dark Surface (	•			irk Surfa				pphytic vegetation and weltand
	idy Mucky Minera			юх Берг	essions (	(FO)	nyaroi		e present, unless disturbed or problematic
	n Mucky Peat or I		,						problematic
Restrictive	Layer (if observe	ed):							
Туре:					_		Hydric s	soil present	!? <u>N</u>
Depth (inche	es):								
Remarks:						<u> </u>			
HYDROLO	OGY								
	drology Indicato	re.							
I -				-11 464	(د با مد		0		
	cators (minimum	or one is	requirea; cneck			40)	Sec		cators (minimum of two required)
	Water (A1)				Fauna (B		_		Soil Cracks (B6)
Saturation	ter Table (A2)				uatic Plan n Sulfide		. –		Patterns (B10) on Water Table (C2)
	arks (B1)					-	Living Roots —		Burrows (C8)
	it Deposits (B2)			(C3)	i Milzosp	neres on		′	n Visible on Aerial Imagery (C9)
	osits (B3)				e of Redu	iced Iron	(C4) —		r Stressed Plants (D1)
	t or Crust (B4)						illed Soils —	_	hic Position (D2)
	osits (B5)			(C6)			_		tral Test (D5)
	on Visible on Aerial	l Imagery	(B7)	. ` ′	ck Surfac	e (C7)	_	_	,
Sparsely	Vegetated Conca	ve Surfac	e (B8)	Gauge o	r Well Da	ta (D9)			
Water-S	tained Leaves (B9)	)		Other (E	xplain in	Remarks	)		
Field Obser	vations:								
Surface wate		Yes	No		Depth (i	nches):		Weti	and
Water table		Yes	No		Depth (i			hydr	ology
Saturation p	resent?	Yes	No		Depth (i	nches):		pres	ent? N
(includes ca	pillary fringe)				<u> </u>				
Describe red	orded data (strea	m gauge	e, monitoring well	, aerial p	hotos, pi	revious ii	nspections), if a	available:	
	·	_	_	·	•				
Remarks:									

Project/Site South Dayton Landfill	City/0	County:	Moraine / Mo	ntgomery	Sampling Date:	7/23/2013	
Applicant/Owner: CRA		State: Ohio Sampling Point: 12					
Investigator(s): Scott Bush, David Blickwedel		 Se					
Landform (hillslope, terrace, etc.):	ace	— Loc	al relief (conc	ave, conve	ex, none):	Convex	
Slope (%): 0.1 Lat: 39.724256	0	– Long:	-84.221	237°	Datum:	WGS 84	
Soil Map Unit Name Gp		_	٧W	l Classifica	ation:	N/A	
Are climatic/hydrologic conditions of the site typical for	r this time o	f the year	r? Y	(If no, exp	lain in remarks)		
Are vegetation , soil , or hydrol	logy	significa	antly disturbed	?	Are "normal circu	mstances"	
Are vegetation , soil , or hydrol	logy ———	naturally	y problematic?	•	, it's mornial shou	present? Yes	
SUMMARY OF FINDINGS				(If nee	ded, explain any ar	nswers in remarks.)	
Hydrophytic vegetation present? N							
Hydric soil present? Y		ls th	e sampled ar	ea within	a wetlan N		
Wetland hydrology present?		f yes	, optional wetla	and site ID	:		
Remarks: (Explain alternative procedures here or in a	separate re	eport )					
rtemarite. (Explain alternative procedures field of in a	ooparato ro	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
VEGETATION Use scientific names of plan	ts.						
VEGETATION 030 Scientific flames of plan	Absolute	Domina	n Indicator	Domir	nance Test Worksl	neet	
<u>Tree Stratum</u> (Plot size: 30 )	% Cover				r of Dominant Speci		
1					OBL, FACW, or FA		
2				Tota	al Number of Domina	nt	
3				Spe	ecies Across all Strat	a: 0 (B)	
4			_		t of Dominant Specie		
5		- T-4-LO		that are	OBL, FACW, or FA	C: <u>0.00%</u> (A/B)	
<u>Sapling/Shrub stratur</u> (Plot size: 15 )	, <del> </del>	= Total Co	over	Broyal	lence Index Works	thoot	
1 1	,				% Cover of:	Heet	
2		-		OBL s		1 = 0	
3						2 = 0	
4				FAC s	pecies 0 x	3 = 0	
5					·	4 = 0	
		= Total Co	over	UPL s		5 = 0	
Herb stratum (Plot size: 5 )	1					A) <u>0</u> (B)	
1				Preval	ence Index = B/A =		
3				Lludes	phytic Vegetation	Indicatora	
3					priytic vegetation apid test for hydropl		
5				·	ominance test is >5		
6					evalence index is ≤		
7				-	orphogical adaptation	ons* (provide	
8					pporting data in Re		
9			_	se	parate sheet)		
10			_		oblematic hydrophy	tic vegetation*	
Mandagina atratura (Diataina) 20	, <del> </del>	= Total Co	over	— (e:	xplain)		
Woody vine stratum (Plot size: 30 )	,			*Indica	ators of hydric soil and v present, unless distur	vetland hydrology must be	
2			_	H	/drophytic	bed of problematic	
	0	= Total Co	over		getation		
				pr	esent? N	_	
Remarks: (Include photo numbers here or on a separa	ate sheet)						
Unvegetated openwater							

SOIL Sampling Point: 12

Profile Desc	ription: (Descri	be to th	e depth needed	to docu	ment the	indicat	or or confirm	the absence	e of indicators.)
Depth	<u>Matrix</u>		Red	lox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Text	ture	Remarks
									Openwater assumed hydric
									,
-									
	Concentration, D =	= Depleti	on, RM = Reduce	d Matrix	, MS = N	1asked S			n: PL = Pore Lining, M = Matrix
Hydric So	il Indicators:								ematic Hydric Soils:
	isol (A1)				ed Matrix	(S4)			dox (A16) ( <b>LRR K, L, R</b> )
Hist	ic Epipedon (A2)		San	dy Redo	x (S5)		Dark	Surface (S7	') (LRR K, L)
	ck Histic (A3)		—— Stri <sub>l</sub>	oped Ma	trix (S6)				t or Peat (S3) ( <b>LRR K, L, R</b> )
— Hyd	rogen Sulfide (A4	<b>l</b> )	—— Loa	my Mucl	ky Minera	al (F1)	Iron-	-Manganese	Masses (F12) ( <b>LRR K, L, R</b> )
Stra	itified Layers (A5)	)	Loa	my Gley	ed Matrix	(F2)	<b>—</b> Very	Shallow Da	rk Surface (TF12)
2 cr	n Muck (A10)		<b>—</b> Dep	leted Ma	atrix (F3)		X Othe	er (explain in	remarks)
Dep	leted Below Dark	Surface	(A11) — Red	ox Dark	Surface	(F6)			
Thic	k Dark Surface (/	A12)	—— Dep	leted Da	rk Surfac	ce (F7)	*Indic	ators of hydr	ophytic vegetation and weltand
San	dy Mucky Minera	I (S1)	—Red	ox Depr	essions (	(F8)			e present, unless disturbed or
<sub>5 cr</sub>	n Mucky Peat or I	Peat (S3							problematic
Restrictive	Layer (if observe	54).							
Туре:		. <del></del> , .					Hydric	soil presen	t? Y
Depth (inche	ie).						ny ano	con precen	·· —
					•				
Remarks:									
Unveget	ated open wate	er quarr	v nit Assume	d hydrid	3				
		qua	, p.u. ,	y					
LIV(D.D.O.L.)	201/								
HYDROLO									
·	drology Indicato								
	cators (minimum	of one is	required; check				<u>S</u>		icators (minimum of two required)
X Surface				-	Fauna (B	,	_		Soil Cracks (B6)
	ter Table (A2)				uatic Plan				Patterns (B10)
Saturation	` '				n Sulfide		· -		son Water Table (C2)
	arks (B1)				l Rhizosp	heres on	Living Roots		Burrows (C8)
	t Deposits (B2)			(C3)					n Visible on Aerial Imagery (C9)
'	osits (B3)				e of Redu				or Stressed Plants (D1)
	t or Crust (B4)				ron Redu	ction in T	illed Soils		phic Position (D2)
	osits (B5)		(57)	(C6)			-	— FAC-Neu	ıtral Test (D5)
	on Visible on Aeria		· ,		ck Surfac				
	Vegetated Conca		e (B8)	U	r Well Da	` /			
	tained Leaves (B9)	)		Otner (E	xplain in l	Remarks	)		
Field Obser		N/			D- " "			187. 4	land
Surface wate	•	Yes	No		Depth (i				land
Water table	•	Yes	No No		Depth (i				rology
Saturation p	resent? pillary fringe)	Yes	No		Depth (i	nunes):		pres	sent? Y
					h-4		and the Australian Australia	lavailet.	
Describe red	orded data (strea	ım gauge	e, monitoring well	, aerial p	notos, pr	evious ir	nspections), if	available:	
Remarks:									
T. Comanto.									
	land								
Quarry F	ona								

#### WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site South Dayton Landfill	City/0	County: Mo	oraine / Mont	gomery Sampling Date:	7/23/2013
Applicant/Owner: CRA		State:	Ohio	Sampling Point:	13
Investigator(s): Scott Bush, David Blickwedel		Section	on, Township	, Range:	
Landform (hillslope, terrace, etc.):	Terrace	Local re	elief (concav	e, convex, none):	Convex
Slope (%): 0.1 Lat: 39.7	<sup>7</sup> 24718°	– Long:	-84.22125	53° Datum:	WGS 84
Soil Map Unit Name Gp			4WI C	Classification:	N/A
Are climatic/hydrologic conditions of the site type	pical for this time o	f the year?	<u>Y</u> (I	f no, explain in remarks)	
Are vegetation , soil , or	hydrology	significantly	disturbed?	Are "normal circ	umstances"
Are vegetation , soil , or	hydrology	naturally pr	oblematic?		present? Yes
SUMMARY OF FINDINGS				(If needed, explain any a	answers in remarks.)
Hydrophytic vegetation present? N	_				
Hydric soil present? N		Is the s	ampled area	a within a wetlan	1
Wetland hydrology present?		f yes, op	tional wetlan	d site ID:	
Remarks: (Explain alternative procedures here	or in a separate re	eport.)			
VEGETATION Use scientific names of	of plants				
	Absolute	Dominan	Indicator	Dominance Test Works	sheet
<u>Tree Stratum</u> (Plot size: 30	_) % Cover	t Species	Staus	Number of Dominant Specthat are OBL, FACW, or FA	
2				Total Number of Domin Species Across all Stra	
4				Percent of Dominant Spec	<del></del> ' ' '
5				that are OBL, FACW, or F	
	0 :	=Total Cover			
Sapling/Shrub stratum (Plot size: 15	)			Prevalence Index Work	sheet
1				Total % Cover of:	
2				· —	$\begin{array}{ccc} x & 1 & = & & 0 \\ x & 2 & = & & & 0 \end{array}$
3				· <u> </u>	$\frac{x^2 - 0}{x^3 = 0}$
5					x 4 = 360
	0 :	= Total Cover	-	· —	x 5 = 0
Herb stratum (Plot size: 5	)			Column totals 90	(A) 360 (B)
1 Aster pilosus	50	Y	FACU	Prevalence Index = B/A	= 4.00
2 Melilotus officinalis	40	Υ	FACU		
3 Dipsacus laciniatus	10	N	NI	Hydrophytic Vegetation	
4				Rapid test for hydror	
5 6				Dominance test is > Prevalence index is	
7				Morphogical adapta	
8				supporting data in R	**
9				separate sheet)	
10	100 :	= Total Cover		Problematic hydroph (explain)	nytic vegetation*
Woody vine stratum (Plot size: 30	)			*Indicators of hydric soil and present, unless distu	I wetland hydrology must be
2				Hydrophytic	arbod or problematio
	0 :	=Total Cover		vegetation	N
Remarks: (Include photo numbers here or on a	separate sheet)				
, ,	, ,				

SOIL Sampling Point: 13

Profile Desc	ription: (Descr	ibe to th	e depth needed	to docu	ment the	indicat	or or confirm t	he absenc	e of indicators.)
Depth	<u>Matrix</u>		Red	dox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks
0-3	10YR 4/4	100					silt loam		
3-18	10YR4/3	95	10YR 4/6	5	С	М	silt loam and	gravel	Very gravelly
<del>- • • • • • • • • • • • • • • • • • • •</del>	1011(1)0	- 00	1011(470			101	one loant and	gravor	very graverry
<u> </u>	5				140 1	1 1 1		441 1	DI B. III M. M. I
		= Depleti	on, RM = Reduce	ed Matrix	, MS = N	lasked S			n: PL = Pore Lining, M = Matrix
l -	il Indicators:		0	-l. Ol		(0.4)			ematic Hydric Soils:
	isol (A1)				ed Matrix	(54)			lox (A16) (LRR K, L, R)
	ic Epipedon (A2)			dy Redo				•	) (LRR K, L)
	k Histic (A3)	4.		pped Ma		1 (54)		•	or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A	,		-	ky Minera			_	Masses (F12) (LRR K, L, R)
	tified Layers (A5)	)			ed Matrix				k Surface (TF12)
	n Muck (A10)	0 (	`		atrix (F3)		— Other	(explain in	remarks)
	leted Below Dark				Surface	'			
	k Dark Surface (				ırk Surfa				ophytic vegetation and weltand
	dy Mucky Minera			lox Depr	essions (	(64)	hydrolo		e present, unless disturbed or
<sup>5 cr</sup>	n Mucky Peat or	Peat (S3	)						problematic
Restrictive	Layer (if observe	ed):							
Туре:							Hydric s	oil presen	t? N
Depth (inche	s):				•				
Remarks:						<u> </u>			
r torriar no.									
L HYDROLO	)CV								
· -	drology Indicate								
		of one is	required; check				<u>Sec</u>		cators (minimum of two required)
	Water (A1)				Fauna (B	•		_	Soil Cracks (B6)
	ter Table (A2)				uatic Plan			_	Patterns (B10)
Saturation						Odor (C1		_	on Water Table (C2)
	arks (B1)				Rhizosp	heres on	Living Roots	_ ′	Burrows (C8)
	t Deposits (B2)			(C3)	( D !-		<u> </u>	_	n Visible on Aerial Imagery (C9)
	osits (B3)			•		iced Iron		_	r Stressed Plants (D1)
	t or Crust (B4)				ron Redu	ction in I	illed Soils	_	hic Position (D2)
	osits (B5)	Limagon	(P7)	(C6)	ak Curfaa	o (C7)	_	- FAC-Neu	tral Test (D5)
L	on Visible on Aeria Vegetated Conca		· ·	-	ck Surfac r Well Da	. ,			l
· ·	ained Leaves (B9					Remarks	<b>\</b>		
	` .	,		· Other (L	λριαιιι ιιι	( Ciliai Ka	, 		
Field Obser		V	N-		Danth /			Wet	land
Surface wate	•	Yes	— No		Depth (i			Wet	rology
Water table Saturation p		Yes Yes	No		Depth (i Depth (i			_	ent? N
(includes ca		105			Dehii (I	1101103).		Pies	
		.m. a	n manitarina II	oorial	hotos :::	coviores !::	oppostions\ if =	voilable:	
Describe red	orded data (strea	ın gauge	e, monitoring well	, aeriai p	notos, pi	evious ir	ispections), if a	valiable:	l
									l
Remarks:									
i tomanto.									l
]									
Distinct o	change to upla	nd vege	etation						l

ATTACHMENT C

**ORAM 5.0 DATA FORMS** 

" QUARRY POND/AREA A"

and the second s	Ohio Rapid Assessment Method for Wetlands						
Version 5.0	Background Information Score Boundary Worksheet Narrative Rating Quantitative Rating Categorization Worksheets Field Scoring Form	Ohio EPA, Division of Surface Water Final: February 1, 2001					
Pursuant to 0	ORC Section 3745.30, the Ohio Rapid A	ssessment Method for Wetlands					

#### Instructions

is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW

The investigator is STRONGLY URGED to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: http://www.epa.ohio.gov/dsw/401/index.aspx.

# **Background Information**

Name: SCOTT BUSH	
Date: 7/29/2013	
Affiliation: CRA	
Address: 410 EAGLEVEW BLVD, STE 110, EXTON, P	A 19341
Phone Number: 610-321-1800	
e-mail address: Sbush @craworld.com	
Name of Wetland: OUARRY POND ARCA A	
Vegetation Communit(les):	
HGM Class(es): Depressional	
Location of Wetland include map, address, north arrow, landmarks, distances, roads, etc.	
SEE SITE FIGURES (FIG 142)	
Lat/Long or UTM Coordinate 39.72305 N	84.22373W
USGS Quad Name	SOUTH DAYTON
County	WOMEDWERY
Township	[[I]ON TONING [67]
Section and Subsection	
Hydrologic Unit Code	05080020105
Site Visit	1
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	
Wetland Size (acres, hectares)	Toacres

Name: DUARR	PY POND/	TREA H	1984 M. Salt and Salt Salt Salt M. Salt M. Salt Salt Salt Salt Salt Salt Salt Salt	eder <mark>(la 200 de la composition della compositio</mark>	nic Constantini e e e e e e e e e e e e e e e e e e
	arrow, relationship wit	~	ers, vegetation zones,	etc.)	anne province and a second
SEE S	ITE PLA	N (ATTK	CHMENT	A)	·
	·				
,		÷			
Comments, Narrative Di	iscussion, Justification	n of Category Chan	ges		100 to
	ERAND				
Final score :	795		Ca	ategory	

### **Scoring Boundary Worksheet**

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries," For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Unit if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a miligation site, conservation site, etc.	/	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	/	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	/	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	1	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		/
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		

## **Narrative Rating**

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question .	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	ological Survey 7.5 minute Quadrangle that has he U.S. Fish and Wildlife Service as "critical hened or endangered plant or animal species? hened or endangered plant or animal species? hold to five federally listed endangered or hich can be found in Ohio, the Indiana Bat has his signated (50 CFR 17.95(a)) and the piping plover  Wetland should be evaluated for possible Category 3 status  Go to Question 2	
2	Threatened or Endangered Species. Is the wetland known to ontain an individual of, or documented occurrences of federal or tate-listed threatened or endangered plant or animal species?  Wetland is a Category 3 wetland.  Go to Question 3		Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES  Wetland is a Category 3 wetland  Go to Question 4	Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	(NO) Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	(NO) Go to Question 8a

#	Question	Circle one	
	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of	YES Wetland is a Category 3 wetland. Go to Question 8b	(NO) Go to Question 8b
	canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?		
d8	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of	YES	(NO)
	deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	Wetland should be evaluated for possible Category 3 status.	Go to Question 9a
••••		Go to Question 9a	
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this	YES	(NO)
	elevation, or along a tributary to Lake Erie that is accessible to fish?	Go to Question 9b	Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is	YES	NO
	partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	Wetland should be evaluated for possible Category 3 status	Go to Question 9c
		Go to Question 9d	
9c	Are Lake Erie water levels the wetland's primary hydrological influence,	YES	NO
	i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	Go to Question 9d	Go to Question 9d
9d	Does the wetland have a predominance of native species within its	YES	NO
	vegetation communities, although non-native or disturbance tolerant native species can also be present?	Wetland is a Category 3 wetland	Go to Question 9e
		Go to Question 10	
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES	NO
	3	Wetland should be evaluated for possible Category 3 status	Go to Question 10
		Go to Question 10	
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be	YES	NO)
	characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within	Wetland is a Category 3 wetland.	Go to Question 11
	several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	Go to Question 11	
11	Relict Wet Prairies. Is the wetland a relict wet prairie community	YES	NO
	dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio, Erie County, and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, etc.).	Wetland should be evaluated for possible Category 3 status	Complete Quantitative Rating
		Complete Quantitative Rating	

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Invasive/exotic spp  Lythrum salicaria Myriophyllum spicatum Najas minor Phalaris arundinacea Phragmites australis Potamogeton crispus Ranunculus ficaria Rhammus firangula Typha angustifolia Typha xglauca	fen species  Zygadenus elegans var. glaucus Cacalia plantaginea Carex flava Carex sterilis Carex stricta Deschampsia caespitosa Eleocharis rostellata Eriophorum viridicarinatum Gentianopsis spp. Lobelia kalmii Parnassia glauca Potentilla fruticosa Rhamnus alnifolia Rhynchospora capillacea	bog species  Calla palustris Carex atlantica var. capillacea Carex echinata Carex oligosperma Carex trisperma Chamaedaphne calyculata Decodon verticillatus Eriophorum virginicum Larix laricina Nemopanthus mucronatus Schechzeria palustris Sphagmum spp. Vaccinium macrocarpon Vaccinium corymbosum	Oak Opening species  Carex cryptolepis Carex lasiocarpa Carex stricta Cladium mariscoides Calamagrostis stricta Calamagrostis canadensis Quercus palustris	wet prairie species  Calamagrostis canadensis Calamogrostis stricta Carex atherodes Carex buxbaumii Carex pellita Carex sartwellii Gentiana andrewstii Helianthus grosseserratus Liatris spicata Lysimachia quadriflora Lythrum alatum Pycnanthemum virginianun Silphium terebinthinaceum Sorghastrum nutans
	Salix candida Salix myricoides Salix serissima Solidago ohioensis Tofieldia glutinosa Triglochin maritimum Triglochin palustre	Vaccinium oxycoccos Woodwardia virginica Xyris difformis	•	Spartina pectinata Solidago riddellii

End of Narrative Rating. Begin Quantitative Rating on next page.

# **Quantitative Rating**

	Metric 1. Wetland area (max 6 pts). Estimate the area of wetland. Select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.				
6pts	≥50 acres (≥ 20.2ha)				
5pts	25 - <50 acres (10.1 - <20.2ha)				
4pts	10 - <25 acres (4.0 - <10.1ha)				
3pts	3 - <10 acres (1.2 - <4.0ha)				
.2pts	0.3 - <3 acres (0.12 - <1.2ha)				
1pt	0.1 - <0.3 acres (0.04 - <0.12ha)				
0pts	< 0.1 acres (0.04ha)				

Table 2. Metric to English conversion table with visual estimation sizes.

acres	fť³	yd³	ft on side	yd on side	ha	m²	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

<del></del>		
transiti	2. Upland buffers and intensity of surrounding land uses. Maximum 14 points. Wetlands are systems onal between upland and aquatic environments. Wetlands without "buffers", or that are located where human se is more intensive, are often, but not always, more degraded.	score
2a. Average Buffer Width (abw). Calculate the average buffer width and select only one score. To calculate abw, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: abw of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: abw = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, recently abandoned fields, paved areas, housing developments, unfenced pasture, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt NARROW. 10m to <25m (32 to <82ft) around the perimeter.		<b>/</b>
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s). Select one, or double check up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone (if any).		
7pts	VERY LOW. 2 <sup>nd</sup> growth or older forest, prairie, savannah, wildlife area, etc.	
5pts	LOW. Old field (>10 yrs), shrubland, young 2 <sup>nd</sup> growth forest, etc.	
3pts	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field, etc.	
1pt	HIGH. urban, industrial, open pasture, row cropping, mining, construction, etc.	





hydrol been a	c 3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the logic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has altered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, re more than 30 points.		
also is	ources of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH diwater or perennial surface water connections, can be very high quality wetlands or can have high functions and is.	7	
5pts	High pH groundwater (7.5-9.0)		
3pts	Other groundwater	<b>V</b>	
1pts	Precipitation	<b>V</b>	
3pts	Seasonal surface water		
5pts	Perennial surface water (lake or stream)		
3b. C	onnectivity. Select all that apply and sum score.		
1pt	100 year floodplain. "Floodplain" is defined in OAC Rule 3745-1-50(P) as "the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	/	
1pt	between stream/lake and other human land use. This question asks whether the wetland is located <a href="https://example.co.org/between">between</a> a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.		
1pt	part of wetland or upland (e.g. forest, prairie) complex. Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply		
1pt	part of riparian or upland corridor. See description above.		
wetland	ximum water depth. Select only one and assign score. The Rater does not need to actually observe the when its water depth is greatest in order to award the maximum points for this question. The use of ary indicators, as outlined in the 1987 Manual will be useful in answering this question.	S	\$
3pts	>0.7m (27.6in)	<b>V</b>	
2pts	0.4 to 0.7m (15.7 to 27.6in)		
1pt	<0.4m (<15.7in)		
The use correspo	ration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. of secondary indicators is necessary and expected in order to properly answer this Question. Categories ond to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and ally saturated.	2,5	$\bar{\chi} = 2.5$
4pts	Semipermanently to permanently inundated or saturated.	<b>V</b>	
3pts	Regularly inundated or saturated.		
2pts	Seasonally inundated.		
lpt	Seasonally saturated in the upper 30cm (12in) of soil.	/	

> Wetlands are PEM Seusonally Saturated Quarry Pit is permanent





3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the Rater to evaluate the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

It is very important to stress that this question does not discriminate between wetlands with different types of hydrologic regimes, e.g. between a forested seep wetland located on a floodplain with seasonal inundation and a leatherleaf (*Chamaedaphne calyculata*) bog with precipitation and minor amounts of surface run-off from a small watershed. Rather, it asks the rater to evaluate the "intactness" of the hydrologic regime attributable to *that type of wetland*. In the example above, both the forested seep wetland and the leatherleaf bog can score the maximum points (12) if there no, or no apparent, modifications to the natural hydrologic regime.

Once the Rater has listed all possible past and ongoing disturbances, the Rater should check the most appropriate category to describe the present state of the wetland. In instances where the Rater believes that a wetland falls between two categories, or where the Rater is uncertain as to which category is appropriate, it is appropriate to "double check" and average the score.

The labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a hydrologic disturbance continuum, from very high to very low or no disturbance.

The Rater may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

ditch(es), in or near the wetland

point source discharges to the (non-stormwater)

tile(s), in or near the wetland

dike(s), in or near the wetland

weir(s), in or near the wetland

dredging activities in or near the wetland

dredging activities in or near the wetland

other (specify)

NOT SURE NO Circle one answer. Have any of YES the disturbances identified above Assign a score of 12 since Double check "none or Assign a score 1, 3 or 7, or caused or appear to have caused none apparent" and an intermediate score, there are no or no more than trivial alterations to the depending on degree of apparent modifications. "recovered" and assign a wetland's natural hydrologic recovery from the score of 9.5. regime, or have they occurred so disturbance. far in the past that current hydrology should be considered to be "natural."?

Select one or double check adjoining numbers and average the score.		score
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the rater.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	





Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be "natural."?

YES

Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.

NO

Assign a score of 4 since there are no or no apparent modifications.

NOT SURE

Double check "none or none apparent" and "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	/

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.		
7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to <u>not</u> be a good example of its type or class because of past or present disturbances, successional state, etc.	1





4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify a possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. In some instances, the scores can be viewed as a habitat alteration continuum, from very high to very low or no disturbance. The Rater may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.



(	Check all that are observed present in or near the wetland.			
		Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, sheep, pigs, etc.)			Sedimentation
		Clearculting		Dredging
		Selective cutting		Farming
		Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	$\mathcal{I}$	Toxic pollutants	V	Other (specify) MINING
L	$\checkmark$	Shrub/sapling removal		Other (specify)

NO

Circle one answer. Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat, or have occurred so far in the past that current habitat should be considered to be "natural."?

Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from

the disturbance.

YES

Assign a score of 9 since there are no or no apparent modifications.

Double check "none or none apparent" and "recovered" and assign a score of 7.5.

NOT SURE

Select one score or double check adjoining numbers and average the score.		
9pts	opts NONE OR NONE APPARENT. There are no alterations, or no alterations that are apparent to the Rater.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	/

Metric 5. Special wetland communities. Maximum 10 points. Assign or deduct points if wetland has the feature described. Refer to Narrative Rating for guidance. No wetland can receive more than 10 points even if multiple categories are applicable.		
Bog (10 pts)  Lake plains sand prairies (Oak Openings) (10 pts)		
Fen (10 pts)	Relict wet prairies (10 pts)	
Old Growth Forest (10 pts)	Known occurrence of threatened/endangered species (10 pts)	
Mature Forested Wetland (5 pts)	Significant migratory songbird/waterfowl habitat (10 pts)	
Coastal wetlands, unrestricted hydrology (10	Category 1 wetlands (See Narrative Rating #5) (-10 pts)	
Coastal wetlands, restricted hydrology (5 pts)		





Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.  6a. Wetland Vegetation Communities. Check each community present both vertically and horizontally within the wetland with an area of at least 0.1hectares or 1000m² (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.  Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna spp., *Spirodela* spp.)* are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.  Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluefoint slough.  Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.  Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.  Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by expos				
wetland with an area of at least 0.1hectares or 1000m² (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table 4 or Table 5. Sum the scores for the classes present.  Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna spp., *Spinotela* spp.*) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.  Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.  Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.  Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.  Mudflats. The "mudfliat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	Metric 6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.			
of the water for most of the growing season in most years. Floating aquatic species like duckweed ( <i>Lemna</i> spp., <i>Spirodela</i> spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.  Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.  Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.  Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.  Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.  Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	wetland	with an area of at least 0.1hectares or 1000m <sup>2</sup> (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table		
mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.  Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wellands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.  Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.  Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.  Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.		of the water for most of the growing season in most years. Floating aquatic species like duckweed (Lemna spp., Spirodela spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct	0	
species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.  Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.  Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.  Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	<b>/</b>	mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie		
(20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.  Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.  Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.		species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested		
described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.  Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	•	(20ft) or tailer. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in	0	
et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.		described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly	0	
Other (See User's Manual)	$\sqrt{}$	et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy"	it in the second	
		Other (See User's Manual)		

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

111.511	quanty mean.
Cover scale	Description
0	the vegetation community is either, 1) absent from welland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the welland
1	vegetation community is present and either,  1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or  2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either,  1) comprises a significant part of the welland's vegetation and is of moderate quality, or  2) the vegetation community comprises a small part of the welland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, eithough non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1ha (0.247 acres)	
1	Low 0.1 to <1ha (0.247 to 2.47 acres)	
2	Moderate 1ha to ≺4ha (2.47 to 9.88 acres)	
3	High 4ha (9.88 acres) or more	





	orizontal (plan view) interspersion. Select only one and assign score. Evaluate the wetland from a "plan l.e. as if the looking down upon it. See Figure 1.	
5pts	HIGH. Wetland has a high degree of interspersion.	
4pts	MODERATELY HIGH. Wetland has a moderately high degree of interspersion.	
3pts	MODERATE. Wetland has a moderate degree of interspersion.	
2pts	MODERATELY LOW. Wetland has a moderately low degree of interspersion.	
1pt	LOW. Wetland has a low degree of interspersion.	$\sqrt{}$
0pts	NONE. Wetland has no plan view interspersion.	

6c. Co	6c. Coverage of Invasive Plant Species. Refer to Table 1 on Page 7 for list. Select only one and assign score.		
-5pts	Extensive. >75% areal cover of invasive species		
-3pts	Moderate 25-75% areal cover of invasive species	/	
-1pt	Sparse. 5-25% areal cover of invasive species		
0pts	Nearly absent. <5% areal cover of invasive species		
1pt	Absent.		

6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	0
Vegetated hummocks and tussocks.	
Coarse woody debris >15cm (6in) in diameter	
Standing dead trees >25cm (10in) diameter at breast height	
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction.	

Table 6. Cover scale for microtopographic habitat features.

microtopographic habitat quality	narrative description
0	feature is absent or functionally absent from the wetland
1	feature is present in the welland in very small amounts or if more common, of low quality
2 .	feature is present in moderate amounts, but not of highest quality, or in small amounts of highest quality
3	present in moderate or greater

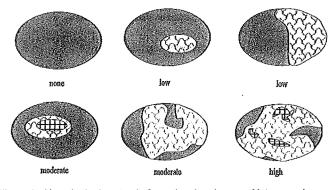


Figure 1. Hypothetical wetlands for estimating degree of interspersion.



## End of Quantitative Rating. Complete Categorization Worksheets.

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a>.

# **ORAM Summary Worksheet**

		or i	answer nsert	
		S	core	Result
Narrative Rating	Question 1 Critical Habitat	YES	(NO)	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	(NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	(NG)	If yes, Category 3.
	Question 4. Significant bird habitat	YES	(10)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	(40)	If yes, Category 1.
	Question 6. Bogs	YES	(NO_	If yes, Category 3.
	Question 7. Fens	YES	ÑΟ	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	(NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	(NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	(NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	(NO)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size			
	Metric 2. Buffers and surrounding land use			2
	Metric 3. Hydrology			19,5
	Metric 4. Habitat			2
	Metric 5. Special Wetland Communities			O
	Metric 6. Plant communities, interspersion, microtopography			0
	TOTAL SCORE  Consult most recent score calibration report at <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a> to determine the wetland's category based on its quantitative score			Category based on score breakpoints

# Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	(NO)	Is quantitative rating score less than the Category 2 scoring threshold (excluding gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been overcategorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score greater than the Category 2 scoring threshold (including any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on an quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	(NO) Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	(Category 1)	Category 2	Category 3

**End of Ohio Rapid Assessment Method for Wetlands.** 

"SMALL POND/AREA B"

	Ohio Rapid Assessment Method for Wetlands		
Version 5.0	Background Information Score Boundary Worksheet Narrative Rating Quantitative Rating Categorization Worksheets Field Scoring Form	Ohio EPA, Division of Surface Water Final: February 1, 2001	
Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands			

#### Instructions

is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW

The investigator is STRONGLY URGED to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland *may* be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is VERY IMPORTANT to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a>.

# **Background Information**

Name: SCOTT BUSH	
Date: 7/29/2013	
Affiliation: CRA	
Address: 410 EAGLEVIEW GLVD, STE 110, EYTON,	YA 19341
Phone Number: 610-321-1800	
e-mail address: Sbush Octaworld, com	
Name of Wetland: SMALL POND / AREA B	
Vegetation Communit(les): PEM PSS	
HGM Class(es): DCDYCSTONAL	
Location of Wetland include map, address, north arrow, landmarks, distances, roads, etc.	
Lat/Long or UTM Coordinate 39.72570 N	1
USGS Quad Name County	SOUTH DAYTON MONTGOMERY
Township	THOO TO OTHER T
Section and Subsection	
Hydrologic Unit Code	05080020105
Site Visit	/
National Wetland Inventory Map	<b>U</b>
Ohio Wetland Inventory Map	
Soil Survey	1
Delineation report/map	had
Wetland Size (acres, hectares)	0.08 acre

Name: SMP1	L POND/A	REA B		
sketch (include nor	th arrow, relationship v	vith other surface waters, vege		
1		LATTACHMENT		
	e Discussion, Justificat	clon of Category Changes		
Final score :	200		Category	}

### **Scoring Boundary Worksheet**

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly, Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Unit if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a mitigation site, conservation site, etc.	/	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	/	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.		
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	/	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		/
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		V

## **Narrative Rating**

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

PHORESTER			
#	Question	Circle one	
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	(NO) Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	(NO) Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES ( Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ( Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

Phidelessan			
#	Question	Circle one	200
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	Go to Question 8b
8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status.  Go to Question 9a	Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 9d	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 9d
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES  Wetland is a Category 3 wetland  Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramlneous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio, Erie County, and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrım salicaria	Zygadenus elegans var. glaucus	Calla palustris	Carex cryptolepis	Calamagrostis canadensis
Myriophyllum spicatum	Cacalia plantaginea	Carex atlantica var, capillacea	Carex lasiocarpa	Calamogrostis stricta
Najas minor	Carex flava	Carex echinata	Carex stricta	Carex atherodes
Phalaris arundinacea	Carex sterilis	Carex oligosperma	Cladium mariscoides	Carex buxbaumii
Phragmites australis	Carex stricta	Carex trisperma	Calamagrostis stricta	Carex pellita
Potamogeton crispus	Deschampsia caespitosa	Chamaedaphne calyculata	Calamagrostis canadensis	Carex sartwellii
Ranunculus ficaria	Eleocharis rostellata	Decodon verticillatus	Quercus palustris	Gentiana andrewsii
Rhamnus frangula	Eriophorum viridicarinatum	Eriophorum virginicum		Helianthus grosseserratus
Typha angustifolia	Gentianopsis spp.	Larix laricina		Liatris spicata
Typha xglauca	Lobelia kalmii	Nemopanthus mucronatus		Lysimachia quadriflora
<i>71</i> 0	Parnassia glauca	Schechzeria palustris		Lythrum alatum
	Potentilla fruticosa	Sphagman spp.		Pycnanthemum virginianum
	Rhamnus alnifolia	Vaccinium macrocarpon		Silphium terebinthinaceum
	Rhynchospora capillacea	Vaccinium corymbosum		Sorghastrum nutans
	Salix candida	Vaccinium oxycoccos		Spartina pectinata
	Salix myricoides	Woodwardia virginica		Solidago riddellii
	Salix serissima	Xyris difformis		
	Solidago ohioensis			
	Tofieldia glutinosa			
í	Triglochin maritimum	•		
•	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

# **Quantitative Rating**

	Metric 1. Wetland area (max 6 pts). Estimate the area of wetland. Select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.			
6pts	≥50 acres (≥ 20.2ha)			
5pts	25 - <50 acres (10.1 - <20.2ha)			
4pts	10 - <25 acres (4.0 - <10.1ha)			
3pts	3 - <10 acres (1.2 - <4.0ha)			
.2pts	0.3 - <3 acres (0.12 - <1.2ha)			
1pt	0.1 - <0.3 acres (0.04 - <0.12ha)			
0pts	< 0.1 acres (0.04ha)	$\overline{}$		

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft²	yd²	ft on side	yd on side	ha	m²	m on side	
50	2,177,983	241,998	1476	492	20.2	202,000	449	
25	1,088,992	120,999	1044	348	10,1	101,000	318	
10	435,596	48,340	660	220	4.1	41,000	203	
3	130,679	14,520	362	121	1.2	12,000	110	
0.3	13,067	1,452	114	38	0.12	1,200	35	
0.1	4,356	484	66	22	0.04	400	20	

transition	<ol><li>Upland buffers and intensity of surrounding land uses. Maximum 14 points. Wetlands are systems onal between upland and aquatic environments. Wetlands without "buffers", or that are located where human e is more intensive, are often, but not always, more degraded.</li></ol>	score
estimat buffers Intensiv	erage Buffer Width (abw). Calculate the average buffer width and select only one score. To calculate abw, the buffer width on each side (max of 50m) and divide by the number of sides. Example: abw of a wetland with of 100m, 25m, 10m and 0m would be calculated as follows: abw = (50m + 25m + 10m + 0m)/4 = 21.25m. The land uses are not buffers, e.g. active frow cropping, recently abandoned fields, paved areas, housing tements, unfenced pasture, etc.	-
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
	ensity of predominant surrounding land use(s). Select one, or double check up to two and average score, intensity of the predominant land use(s) outside the wetland's buffer zone (if any).	
7pts	VERY LOW. 2 <sup>nd</sup> growth or older forest, prairie, savannah, wildlife area, etc.	
5pts	LOW. Old field (>10 yrs), shrubland, young 2 <sup>nd</sup> growth forest, etc.	
3pts	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field, etc.	
1pt	HIGH. urban, industrial, open pasture, row cropping, mining, construction, etc.	





F		
hydrold been a	3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the egic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has litered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, e more than 30 points.	
also is	burces of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH water or perennial surface water connections, can be very high quality wetlands or can have high functions and	ーチ
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	/
1pts	Precipitation	<b>V</b>
3pts	Seasonal surface water	V
5pts	Perennial surface water (lake or stream)	
3b. Co	nnectivity. Select all that apply and sum score.	1
1pt	100 year floodplain. "Floodplain" is defined in OAC Rule 3745-1-50(P) as "the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	/
1pt	between stream/lake and other human land use. This question asks whether the wetland is located <a href="mailto:between">between</a> a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	part of wetland or upland (e.g. forest, prairie) complex. Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish" like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply	
1pt	part of riparian or upland corridor. See description above.	
wetland	ximum water depth. Select only one and assign score. The Rater does not need to actually observe the when its water depth is greatest in order to award the maximum points for this question. The use of ary indicators, as outlined in the 1987 Manual will be useful in answering this question.	
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	Variation
The use correspo	ration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. of secondary indicators is necessary and expected in order to properly answer this Question. Categories and to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and ally saturated.	2
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	/
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	
		L





3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the Rater to evaluate the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

It is very important to stress that this question does not discriminate between wetlands with different types of hydrologic regimes, e.g. between a forested seep wetland located on a floodplain with seasonal inundation and a leatherleaf (*Chamaedaphne calyculata*) bog with precipitation and minor amounts of surface run-off from a small watershed. Rather, it asks the rater to evaluate the "intactness" of the hydrologic regime attributable to *that type of wetland*. In the example above, both the forested seep wetland and the leatherleaf bog can score the maximum points (12) if there no, or no apparent, modifications to the natural hydrologic regime.

Once the Rater has listed all possible past and ongoing disturbances, the Rater should check the most appropriate category to describe the present state of the wetland. In instances where the Rater believes that a wetland falls between two categories, or where the Rater is uncertain as to which category is appropriate, it is appropriate to "double check" and average the score.

The labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a hydrologic disturbance continuum, from very high to very low or no disturbance.

The Rater may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland. ditch(es), in or near the wetland point source discharges to the (non-stormwater) tile(s), in or near the wetland filling/grading activities in or near the wetland dike(s), in or near the wetland road beds/RR beds in or near the wetland weir(s), in or near the wetland dredging activities in or near the wetland stormwater inputs (addition of water) other (specify) YES) NO **NOT SURE** Circle one answer. Have any of the disturbances identified above Assign a score 1, 3 or 7, or Assign a score of 12 since Double check "none or caused or appear to have caused an intermediate score, there are no or no none apparent" and more than trivial alterations to the "recovered" and assign a wetland's natural hydrologic depending on degree of apparent modifications. recovery from the score of 9.5. regime, or have they occurred so disturbance. far in the past that current hydrology should be considered to be "natural."? Select one or double check adjoining numbers and average the score. score 12pts NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the rater. RECOVERED. The wetland appears to have recovered from past modifications. 7pts 3pts RECOVERING. The wetland appears to be in the process of recovering from past modifications. 1pt RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.





Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes,
there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that
are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In
many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a
wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be
appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is
the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

Circle one answer. Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils or substrates, or have they occurred so far in the past that current conditions should be considered to be "natural."?

### YES)

Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.

#### NO

Assign a score of 4 since there are no or no apparent modifications.

### NOT SURE

Double check "none or none apparent" and "recovered" and assign a score of 3.5.

Select	one or double check adjoining numbers and average the score.	score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	V

qualita similar	abitat development. Select only one and assign score. This question asks the Rater to assign an overall tive rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of ion, watershed, or state.	
7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears to <u>not</u> be a good example of its type or class because of past or present disturbances, successional state, etc.	1





4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify a possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. In some instances, the scores can be viewed as a habitat alteration continuum, from very high to very low or no disturbance. The Rater may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.

£				·					
		Chec	k all that are o	bserved present in c	r nea	r the wetland.		1	
			Mowing			Herbaceous layer/aquatic bed removal			
			Grazing (cat	Grazing (cattle, sheep, pigs, etc.)		Sedimentation			
			Clearcutting			Dredging			
			Selective cul	iting		Farming			
			Woody debri	s removal		Nutrient enrichment, e.g. r	nuisance algae		
		$\checkmark$	Toxic polluta	nts		Other (specify) SUY V DUA	ded by land	61)	
		·	Shrub/saplin	g removal		Other (specify)			
	Circle one any of the identified a appeared the trivial alter wetland's in have occur past that coshould be "natural."?	disturb bove o to caus ations natural red so urrent	cances caused or se more than to the habitat, or far in the habitat	YES  Assign a score 1, 3 or an intermediate score, depending or degree of recovery free the disturbance.	,	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE  Double check none apparent "recovered" ar a score of 7.5.	t" and nd assig	
Sele	ct one scor	or do	ouble check a	djoining numbers an	d ave	rage the score.			
9pts	NONE	OR NO	ONE APPARE	NT. There are no alter	ations	s, or no alterations that are ap	parent to the Ra	ter.	
6pts	RECO	/ERE	D. The wetland	d appears to have reco	vered	from past alterations.			
3pts	RECO\	/ERIN	G. The wetlan	d appears to be in the	proce	ess of recovering from past alt	erations.		

Metric 5. Special wetland communities. Maximum 10 points. Assign or deduct points if wetland has the feature described. Refer to Narrative Rating for guidance. No wetland can receive more than 10 points even if multiple categories are applicable.						
Bog (10 pts)	Bog (10 pts) Lake plains sand prairies (Oak					
Fen (10 pts)		Relict wet prairies (10 pts)				
Old Growth	Forest (10 pts)	Known occurrence of threatened/endangered specie	cies (10 pts)			
Mature Fore	sted Wetland (5 pts)	Significant migratory songbird/waterfowl habitat (10 p	ots)			
Coastal wet	Coastal wetlands, unrestricted hydrology (10 pts)  Category 1 wetlands (See Narrative Rating #5) (-10 pts)					
Coastal wet	Coastal wetlands, restricted hydrology (5 pts)					

RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not

recovered from past alterations, and/or the alterations are ongoing.



1pt



<u> </u>		
Metric	6. Vegetation, Interspersion, and Microtopography. Maximum 20 points.	
wetland	tland Vegetation Communities. Check each community present <u>both vertically and horizontally</u> within the with an area of at least 0.1hectares or 1000m² (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table ole 5. Sum the scores for the classes present.	
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed ( <i>Lemna</i> spp., <i>Spirodela</i> spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or tailer. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	
<b>/</b>	Other (See User's Manual) VEYY SMALL WELLAND	

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

	quanty treatm
Cover scale	Description
0	the vegelation community is either, 1) absent from welland, or 2) comprises less than 0.1ha (0.2471 acres) of contiguous area within the welland
1	vegetation community is present and either,  1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or  2) if it comprises a significant part of the wetland's vegetation, the community is of low quality
2	the vegetation community is present and either,  1) comprises a significant part of the welland's vegetation and is of moderate quality, or  2) the vegetation community comprises a small part of the welland's vegetation but is of high quality
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more





	orizontal (plan view) interspersion. Select only one and assign score. Evaluate the wetland from a "plan e. as if the looking down upon it. See Figure 1.	
5pts	HIGH. Wetland has a high degree of interspersion,	
4pts	MODERATELY HIGH. Wetland has a moderately high degree of interspersion.	
3pts	MODERATE. Wetland has a moderate degree of interspersion.	
2pts	MODERATELY LOW. Wetland has a moderately low degree of interspersion.	
1pt	LOW. Wetland has a low degree of interspersion.	l John State of State
0pts	NONE. Wetland has no plan view interspersion.	

6c. Coverage of Invasive Plant Species. Refer to Table 1 on Page 7 for list. Select only one and assign score.		
-5pts	Extensive. >75% areal cover of invasive species	
-3pts	Moderate 25-75% areal cover of invasive species	$\checkmark$
-1pt	Sparse. 5-25% areal cover of invasive species	
0pts	Nearly absent. <5% areal cover of invasive species	
1pt	Absent.	

6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	
Vegetated hummocks and tussocks.	
Coarse woody debris >15cm (6in) in diameter	
Standing dead trees >25cm (10in) diameter at breast height	
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction.	1

Table 6. Cover scale for microtopographic habitat features.

microtopographic habitat quality	narrative description
0	feature is absent or functionally absent from the wetland
1	feature is present in the wetland in very small amounts or if more common, of low quality
2	feature is present in moderate amounts, but not of highest quality, or in small amounts of highest quality
3	present in moderate or greater amounts and of highest quality

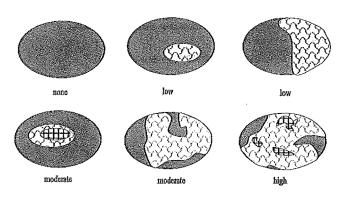


Figure 1. Hypothetical wetlands for estimating degree of interspersion.



## **End of Quantitative Rating. Complete Categorization Worksheets.**

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a>.

# **ORAM Summary Worksheet**

Entractional Action and Art (ART NOT All Arthresis and Action) and Action (Arthresis and Arthresis and Action (Arthresis and Arthresis and Arthresis and Arthresis and Arthresis and Action (Arthresis and Arthresis and A		circle answer or insert	
	T	score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES NO	If yes, Category 3
	Question 9e. Lake Erle Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size		0
	Metric 2. Buffers and surrounding land use		2
	Metric 3. Hydrology		12
	Metric 4. Habitat		3
	Metric 5. Special Wetland Communities		0
	Metric 6. Plant communities, interspersion, microtopography		0
	TOTAL SCORE  Consult most recent score calibration report at <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a> to determine the wetland's category based on its quantitative score	17	Category based on score breakpoints

**Complete Wetland Categorization Worksheet.** 

# **Wetland Categorization Worksheet**

	T		
Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions:  Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	(NO)	Is quantitative rating score less than the Category 2 scoring threshold (excluding gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been overcategorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	(NO)	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	(NO)	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold <i>(including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on an quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	(NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category			
Choose one	Category 1	Category 2	Category 3
	- E		

**End of Ohio Rapid Assessment Method for Wetlands.** 

"BIG POND/AREA C"

	Ohio Rapid Assessment Method for Wetlands			
Version 5.0	Background Information Score Boundary Worksheet Narrative Rating Quantitative Rating Categorization Worksheets Field Scoring Form	Ohio EPA, Division of Surface Water Final: February 1, 2001		
Pursuant to 0	ORC Section 3745.30, the Ohio Rapid A	ssessment Method for Wetlands		

Pursuant to ORC Section 3745.30, the Ohio Rapid Assessment Method for Wetlands is a guidance or policy and DOES NOT HAVE THE FORCE OF LAW

#### Instructions

The investigator is STRONGLY URGED to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is VERY IMPORTANT to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at the following address: <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a>.

## **Background Information**

Name: SCOTT BUSH	
Date: 129 2013	And the state of t
Affiliation: CRA	
Address: 4/0 EAGLEVIEW BLVD. SIE 110, EYTON, PA 19	734
Phone Number: 610-321-1800	
e-mail address: 8 bush @ craworld. Lorn	
Name of Wetland: BIG POND / AREA C - DAYTON L	ANDFILL
Vegetation Communit(ies): PEW	
HGM Class(es): Depressional	
Location of Wetland include map, address, north arrow, landmarks, distances, roads, etc.	
SPE SITE PIGURES (FIG. 142)	
	1
	04 - 6 - 1
Lat/Long or UTM Coordinate 39,77650 N	84.2225W
USGS Quad Name	SOUTH DAYTON
County	MONTGOMERY
Township Section and Subsection	
Hydrologic Unit Code	05080020105
Site Visit	. /
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	V
Delineation report/map	1
Wetland Size (acres, hectares)	0.8 ACRE

Name: BIG POND/AREA C		
sketch (include north arrow, relationship with other surface waters, vegetation zones, etc.)		
SEE SITE PLAN (ATTACHMENT A)		
Comments, Narrative Discussion, Justification of Category Changes		
SEE WETLAND REPORT		
Final score : 245 Category	1	

### **Scoring Boundary Worksheet**

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Unit if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a mitigation site, conservation site, etc.	/	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.		
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	/	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	/	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		/

### **Narrative Rating**

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap. The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is a legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Reynoldsburg Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	2000
1	Critical Habitat. Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 2	(NO) Go to Question 2
2	Threatened or Endangered Species. Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES  Wetland is a Category 3 wetland.  Go to Question 3	Go to Question 3
3	Documented High Quality Wetland. Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	Go to Question 4
4	Significant Breeding or Concentration Area. Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES ( Wetland is a Category 3 wetland Go to Question 5	No Go to Question 5
5	Category 1 Wetlands. Is the wetland less than 0.5 hectares (1 acre) in size and hydrologically isolated and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by Phalaris arundinacea, Lythrum salicaria, or Phragmites australis, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	Bogs. Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly <i>Sphagnum</i> spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES  Wetland is a Category 3 wetland  Go to Question 7	NO Go to Question 7
7	Fens. Is the wetland a carbon accumulating (peat, muck) wetland that is the saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES ( Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a

#	Question	Circle one	23
8a	"Old Growth Forest." Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES  Wetland is a Category 3 wetland.  Go to Question 8b	Go to Question 8t
8b	Mature forested wetlands. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES  Wetland should be evaluated for possible Category 3 status. Go to Question 9a	Go to Question 9a
9a	Lake Erie coastal and tributary wetlands. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 9d	NO Go to Question 9d
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 9d
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES  Wetland should be evaluated for possible Category 3 status  Go to Question 10	NO Go to Question 10
10	Lake Plain Sand Prairies (Oak Openings) Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES  Wetland is a Category 3 wetland.  Go to Question 11	NO Go to Question 11
11	Relict Wet Prairies. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio, Erie County, and portions of western Ohio Countles (e.g. Darke, Mercer, Miami, Montgomery, etc.).	YES  Wetland should be evaluated for possible Category 3 status  Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	Zygadenus elegans var. glaucus	Calla palustris	Carex cryptolepis	Calamagrostis canadensis
Myriophyllum spicatum	Cacalia plantaginea	Carex atlantica var, capillacea	Carex lasiocarpa	Calamogrostis stricta
Najas minor	Carex flava	Carex echinata	Carex stricta	Carex atherodes
Phalaris arundinacea	Carex sterilis	Carex oligosperma	Cladium mariscoides	Carex buxbaumii
Phragmites australis	Carex stricta	Carex trisperma	Calamagrostis stricta	Carex pellita
Potamogeton crispus	Deschampsia caespitosa	Chamaedaphne calyculata	Calamagrostis canadensis	Carex sartwellii
Rammeulus ficaria	Eleocharis rostellata	Decodon verticillatus	Quercus palustris	Gentiana andrewsii
Rhamnus frangula	Eriophorum viridicarinatum	Eriophorum virginicum		Helianthus grosseserratus
Typha angustifolia	Gentianopsis spp.	Larix laricina		Liatris spicata
Typha xglauca	Lobelia kalmii	Nemopanthus mucronatus		Lysimachia quadriflora
	Parnassia glauca	Schechzeria palustris		Lythrum alatum
	Potentilla fruticosa	Sphagnum spp.		Pycnanthemum virginianum
	Rhamnus alnifolia	Vaccinium macrocarpon		Silphium terebinthinaceum
	Rhynchospora capillacea	Vaccinium corymbosum		Sorghastrum nutans
	Salix candida	Vaccinium oxycoccos		Spartina pectinata
	Salix myricoides	Woodwardia virginica		Solidago riddellii
	Salix serissima	Xyris difformis		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

### **Quantitative Rating**

	1. Wetland area (max 6 pts). Estimate the area of wetland. Select the appropriate size class sign score. Estimated areas should clearly place the wetland within the appropriate class.	score 2
6pts	≥50 acres (≥ 20.2ha)	
5pts	25 - <50 acres (10.1 - <20.2ha)	
4pts	10 - <25 acres (4.0 - <10.1ha)	
3pts	3 - <10 acres (1.2 - <4.0ha)	
2pts	0.3 - <3 acres (0.12 - <1.2ha)	
1pt	0.1 - <0.3 acres (0.04 - <0.12ha)	
0pts	< 0.1 acres (0.04ha)	

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft²	yď²	ft on side	yd on side	ha	m²	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10,1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

transitio	2. Upland buffers and intensity of surrounding land uses. Maximum 14 points. Wetlands are systems and between upland and aquatic environments. Wetlands without "buffers", or that are located where human e is more intensive, are often, but not always, more degraded.	score
estimat buffers Intensiv	erage Buffer Width (abw). Calculate the average buffer width and select only one score. To calculate abw, ee buffer width on each side (max of 50m) and divide by the number of sides. Example: abw of a wetland with of 100m, 25m, 10m and 0m would be calculated as follows: abw = (50m + 25m + 10m + 0m)/4 = 21.25m. we land uses are not buffers, e.g. active row cropping, recently abandoned fields, paved areas, housing oments, unfenced pasture, etc.	Ď
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	
0pts	VERY NARROW. <10m (<32ft) around perimeter.	Jane 1
	ensity of predominant surrounding land use(s). Select one, or double check up to two and average score, ntensity of the predominant land use(s) outside the wetland's buffer zone (if any).	1
7pts	VERY LOW. 2 <sup>nd</sup> growth or older forest, prairie, savannah, wildlife area, etc.	
5pts	LOW. Old field (>10 yrs), shrubland, young 2 <sup>nd</sup> growth forest, etc.	
3pts	MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field, etc.	
1pt	HIGH. urban, industrial, open pasture, row cropping, mining, construction, etc.	/





hydrolo been al	3. Hydrology. Maximum 30 points. This metric evaluates the wetland's water budget, hydroperiod, the gic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has tered by human activity. A wetland can receive no more than 30 points for Metric 3 even though it is possible, a more than 30 points.	100 mg
also is i	urces of Water. Select all that apply and sum score. This question relates to a wetland's water budget. It reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH water or perennial surface water connections, can be very high quality wetlands or can have high functions and	7
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1pts	Precipitation	/
3pts	Seasonal surface water	<b>/</b>
5pts	Perennial surface water (lake or stream)	
3b. Co	nnectivity. Select all that apply and sum score.	1
1pt	100 year floodplain. "Floodplain" is defined in OAC Rule 3745-1-50(P) as "the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	/
1pt	between stream/lake and other human land use. This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	part of wetland or upland (e.g. forest, prairie) complex. Both this and the next question ask whether the wetland is in physical proximity to, or a part of other nearby wetland or upland natural areas. The difference is whether the area the wetland is "long and narrow" like a river, or more "squarish"like a large forest or woodlot. If the latter is the case, this question applies; if the former, the next question applies. In a few instances, both may apply	
1pt	part of riparian or upland corridor. See description above.	
wetland	ximum water depth. Select only one and assign score. The Rater does not need to actually observe the when its water depth is greatest in order to award the maximum points for this question. The use of ary indicators, as outlined in the 1987 Manual will be useful in answering this question.	2
3pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	
The use	ration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. of secondary indicators is necessary and expected in order to properly answer this Question. Categories and to Zones II, III, and IV of 1987 Manual (Table 5). Zone IV subdivided into seasonally inundated and ally saturated.	1,5
4pts	Semipermanently to permanently inundated or saturated.	
3pts	Regularly inundated or saturated.	
2pts	Seasonally inundated.	
1pt	Seasonally saturated in the upper 30cm (12in) of soil.	\
		1





**3e. Modifications to natural hydrologic regime.** Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the Rater to evaluate the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

It is very important to stress that this question does not discriminate between wetlands with different types of hydrologic regimes, e.g. between a forested seep wetland located on a floodplain with seasonal inundation and a leatherleaf (*Chamaedaphne calyculata*) bog with precipitation and minor amounts of surface run-off from a small watershed. Rather, it asks the rater to evaluate the "intactness" of the hydrologic regime attributable to *that type of wetland*. In the example above, both the forested seep wetland and the leatherleaf bog can score the maximum points (12) if there no, or no apparent, modifications to the natural hydrologic regime.

Once the Rater has listed all possible past and ongoing disturbances, the Rater should check the most appropriate category to describe the present state of the wetland. In instances where the Rater believes that a wetland falls between two categories, or where the Rater is uncertain as to which category is appropriate, it is appropriate to "double check" and average the score.

The labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a hydrologic disturbance continuum, from very high to very low or no disturbance.

The Rater may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

ditch(es), in or near the wetland

filling/grading activities in or near the wetland

dike(s), in or near the wetland

road beds/RR beds in or near the wetland

weir(s), in or near the wetland

dredging activities in or near the wetland

other (specify)

NO NOT SURE YES Circle one answer. Have any of the disturbances identified above Assign a score of 12 since Assign a score 1, 3 or 7, or Double check "none or caused or appear to have caused an intermediate score, none apparent" and there are no or no more than trivial alterations to the wetland's natural hydrologic depending on degree of apparent modifications. "recovered" and assign a recovery from the score of 9.5. regime, or have they occurred so disturbance. far in the past that current hydrology should be considered to be "natural."?

Select	one or double check adjoining numbers and average the score.	score
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the rater.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	/
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	





Metric 4. Habitat Alteration and Development. Maximum 20 points. While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. This metric attempts to evaluate these things under the rubric "habitat alteration." In many instances, items checked as possible hydrologic disturbances in Question 3e will be instead alterations to a wetland's habitat or disruptions in its development (successional state). In other instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. In any case, the Rater should carefully consider what is the actual proximate (direct) cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.

Examples of substrate/soil disturbance include filling and grading, plowing, grazing (hooves), vehicle use (motorbikes, off-road vehicles, construction vehicles), sedimentation, dredging, and other mechanical disturbances to the surface substrates or soils.

**NOT SURE** YES ) NO Circle one answer. Have any of soil or substrate Assign a score 1, 2 or 3, Assign a score of 4 since Double check "none or disturbances caused or or an intermediate score, there are no or no apparent none apparent" and appear to have caused more depending on degree of modifications. "recovered" and assign a than trivial alterations to the recovery from the score of 3.5. wetland's natural soils or disturbance. substrates, or have they occurred so far in the past that current conditions should be considered to be "natural."?

Select one or double check adjoining numbers and average the score.		score
4pts	NONE OR NONE APPARENT. There are no disturbances, or no disturbances apparent to the Rater.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the Rater to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically or hydrogeomorphically similar wetlands. This question presumes a good sense of the types of wetlands and the range in quality typical of the region, watershed, or state.		2
7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	1/
1pt	POOR. Wetland appears to <u>not</u> be a good example of its type or class because of past or present disturbances, successional state, etc.	





4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify a possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. In some instances, the scores can be viewed as a habitat alteration continuum, from very high to very low or no disturbance. The Rater may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.



Circle one answer. Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat, or have occurred so far in the past that current habitat should be considered to be "natural,"?

Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.

Assign a score of 9 since there are no or no apparent modifications.

Double check "none or none apparent" and "recovered" and assign a score of 7.5.

NOT SURE

Select	one score or double check adjoining numbers and average the score.	
9pts	NONE OR NONE APPARENT. There are no alterations, or no alterations that are apparent to the Rater.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	1 James Comment
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	

Metric 5. Special wetland communities. Maximum 10 poi described. Refer to Narrative Rating for guidance. No we categories are applicable.	
Bog (10 pts)	Lake plains sand prairies (Oak Openings) (10 pts)
Fen (10 pts)	Relict wet prairies (10 pts)
Old Growth Forest (10 pts)	Known occurrence of threatened/endangered species (10 pts)
Mature Forested Wetland (5 pts)	Significant migratory songbird/waterfowl habitat (10 pts)
Coastal wetlands, unrestricted hydrology (10 pts)	Category 1 wetlands (See Narrative Rating #5) (-10 pts)
Coastal wetlands, restricted hydrology (5 pts)	





6a. Wei	tland Vegetation Communities. Check each community present both vertically and horizontally within the with an area of at least 0.1hectares or 1000m² (0.2471 acres). Assign a score of 0 to 3 using Tables 3, Table le 5. Sum the scores for the classes present.	2
	Aquatic Bed. Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed ( <i>Lemna</i> spp., <i>Spirodela</i> spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
	Emergent. Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, fens, prairie pothole, and bluejoint slough.	
	Shrub. Includes areas of wetlands dominated by woody vegetation less than 6m (20 ft) tall. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	
	Forested. Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are defined as "vernal pools" in OAC Rule 3745-1-50.	0
	Mudflats. The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB <sub>3</sub> ) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
	Open water. The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas re 1) inundated, 2) unvegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0
	Other (See User's Manual)	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 6 for narrative descriptions of what "low," "moderate," and "high" quality mean.

nigh	"nigh" quality mean.	
Cover scale	Description	
0	the vegetation community is either, 1) absent from wetland, or 2) comprises less than 0.1ha (0.2471 acres) of configuous area within the wetland	
1	vegetation community is present and either,  1) comprises a small part of the wetland's vegetation and is of low or moderate quality, or 2) if if comprises a significant part of the wetland's vegetation, the community is of low quality	
2	the vegetation community is present and either,  1) comprises a significant part of the wetland's vegetation and is of moderate quality, or  2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality	
3	the vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation.	

Table 4. Use this table in conjunction with Table 5 to determine what is a "low," "moderate," or "high" quality community.

narrative	description
low	low species diversity and/or a predominance of non-native or disturbance tolerant native species
moderate	native species are the dominant component of the vegetation, although non-native or disturbance tolerant native species can also be present, and species diversity is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species
high	a predominance of native species, with non-native species absent or virtually absent, and high species diversity and sometimes, but not always, the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1ba (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1ha to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more





	rizontal (plan view) interspersion. Select only one and assign score. Evaluate the wetland from a "plan e. as if the looking down upon it. See Figure 1.	
5pts	HIGH. Wetland has a high degree of interspersion.	
4pts	MODERATELY HIGH. Wetland has a moderately high degree of interspersion.	
3pts	MODERATE. Wetland has a moderate degree of interspersion.	
2pts	MODERATELY LOW. Wetland has a moderately low degree of interspersion.	
1pt	LOW. Wetland has a low degree of interspersion.	<b>/</b>
0pts	NONE. Wetland has no plan view interspersion.	

6c. Co	verage of Invasive Plant Species. Refer to Table 1 on Page 7 for list. Select only one and assign score.	1
-5pts	Extensive. >75% areal cover of invasive species	
-3pts	Moderate 25-75% areal cover of invasive species	$\checkmark$
-1pt	Sparse. 5-25% areal cover of invasive species	
0pts	Nearly absent. <5% areal cover of invasive species	
1pt	Absent.	

<b>6d. Microtopography.</b> Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopographic habitat features often present in wetlands.	3
Vegetated hummocks and tussocks.	0
Coarse woody debris >15cm (6in) in diameter	١
Standing dead trees >25cm (10in) diameter at breast height	0
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction.	A. Care

Table 6. Cover scale for microtopographic habitat features.

microtopographic habitat quality	narrative description
0	feature is absent or functionally absent from the wetland
1	feature is present in the wetland in very small amounts or if more common, of low quality
2	feature is present in moderate amounts, but not of highest quality, or in small amounts of highest quality
3	present in moderate or greater amounts and of highest quality

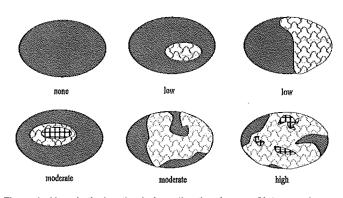


Figure 1. Hypothetical wetlands for estimating degree of interspersion.



### **End of Quantitative Rating. Complete Categorization Worksheets.**

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a>.

## **ORAM Summary Worksheet**

		circle and		RECORDOC THE CONTROL AND AND THAT OF THE THE CONTROL AND THE C
		score	<u> </u>	Result
Narrative Rating	Question 1 Critical Habitat	YES	NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	(NO)	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	(NO)	If yes, Category 3.
	Question 4. Significant bird habitat	YES	(NO)	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	(NO)	If yes, Category 1.
	Question 6. Bogs	YES	(NO)	If yes, Category 3.
	Question 7. Fens	YES	(NO)	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	(NO)	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES (	(NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	(NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands - Unrestricted.	YES	(N)	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	(NO)	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	(NO)	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	(M)	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size			2
	Metric 2. Buffers and surrounding land use			1
	Metric 3. Hydrology			14.5
	Metric 4. Habitat			7
	Metric 5. Special Wetland Communities			()
	Metric 6. Plant communities, interspersion, microtopography			3
	TOTAL SCORE  Consult most recent score calibration report at <a href="http://www.epa.ohio.gov/dsw/401/index.aspx">http://www.epa.ohio.gov/dsw/401/index.aspx</a> to  determine the wetland's category based on its  quantitative score	27,5		Category based on score breakpoints

## **Wetland Categorization Worksheet**

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	( NO	Is quantitative rating score less than the Category 2 scoring threshold (excluding gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been overcategorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES  Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES  Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score <i>greater</i> than the Category 2 scoring threshold <i>(including</i> any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on an quantitative score.
Does the quantitative score fall with the "gray zone" for Category 1 or 2 or Category 2 or 3 wetlands?	YES  Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	(NO)	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit moderate OR superior hydrologic OR habitat, OR recreational functions AND the wetland was not categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES  Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category						
Choose one	Category 1	Category 2	Category 3			

**End of Ohio Rapid Assessment Method for Wetlands.** 

ATTACHMENT D

**COLOR PHOTOGRAPHS** 



1. Typical herbaceous upland field on the Dayton landfill.



2. Uplands herbaceous field along main access road to site.



3. Dense bush honeysuckle along permiter of site.



4. Upland herbaceous areas interspersed with patchy upland scrub thicket on the landfill surface.



5. Wetland refered to as "Small Pond".



6. Wetland refered to as "Small Pond".



7. Small paved area northwest of "Large Pond".



8. Chute leading to "Large Pond".



9. Wetland refered to as "Large Pond".



10. Poison ivy and other wooded vegetation at the south end of the Large Pond.



11. Emergent wetland on fill terrace adjoining north side of Quarry Pond.



12. Uplands on fill terrace north of Quarry Pond.



13. Northern side of Quarry Pond.



14. Looking southwest at Quarry Pond. Note several upland islands occur in the Quarry Pond.